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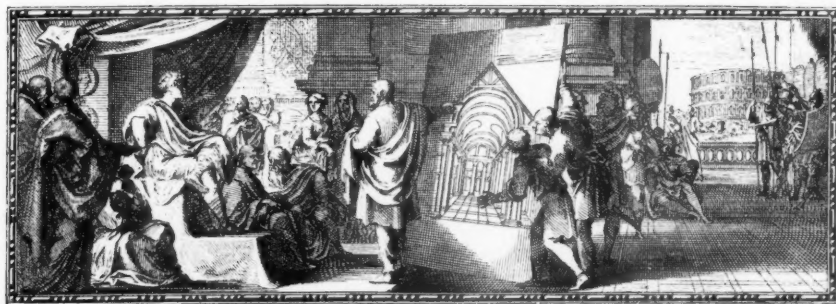
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HAMPTON COURT PALACE
Pencil and sepia wash drawing in the R.I.B.A. Library
By Thomas Hardwick



The Work of Sir Robert Lorimer

BY F. WILLIAM DEAS, M.A., F.R.I.B.A.

[*A Paper read before the Royal Institute of British Architects on Monday, 16 February 1931*]

THE PRESIDENT, SIR BANISTER FLETCHER, F.S.A., IN THE CHAIR

LORIMER was known as a Gothic man, and I must begin by clearing away any misconception which such a description may involve. It was no eclectic admiration for pointed arches, or crockets, or finials, or any other externals of the style that filled Lorimer. What filled him, and filled him passionately, was the spirit of which these things chanced to be the expression, the spirit that inspired the Crusader, chivalry, the mediæval handicrafts, the very costume of the day. No less was it the inspiration of phases of Chinese art of which Lorimer was so wholehearted an admirer and, rather than Gothic with its somewhat narrow implications, I would use the word Romantic as defining his temperament.

The next point is that there is no parallel in English domestic work to the typical Scots house of the end of the seventeenth century, from which came Lorimer's inspiration in his vernacular. Those of you therefore who are unfamiliar with Scots building will, I hope, put away all expectation of English domestic qualities generally or the balanced symmetry of recent fashion particularly. I would ask you to base your judgment on more primitive essentials, on the success or failure of the treatment of forms and masses and their relation to one another.

Another preliminary point. Of the many craftsmen Lorimer employed I can show the work of only a few. It would be unfair to give their names and to omit the rest—so I mention none. All were influenced by Lorimer to the degree that what they did for him differed essentially from their work for themselves or for other architects.

There are two names I must mention as a matter of personal indebtedness. Mr. Matthew, Sir Robert Lorimer's partner, has been extremely kind in helping me to information I could not otherwise have obtained, and the proprietors of *Country Life* have been so good as to allow me the use of three slides of Balmanno from photographs still unpublished and intended for the volume on Lorimer which Mr. Christopher Hussey is preparing.

So great was Lorimer's interest in the crafts that it would not have been surprising had he turned to one of them as his medium of expression. Perhaps what took him further and made him architect was, as much as anything, the influence of his summer home, Kellie Castle. In this house, dating from an early period, but mainly of the end of the seventeenth century, he found the work of the craftsman in stone, in wood, in hand-modelled plaster, even in decorative painting, fused to a dignified yet appealing whole.



FIG. 1. ARDKINGLAS. View from South-east

Lorimer was apprenticed to Rowand Anderson, then the acknowledged head of architecture in Scotland, and a man strong, direct and purposeful alike in character and work. In his office Lorimer laid the solid foundations upon which, when he went to Bodley's, he began the development of that individual expression which was nature's gift to him.

For clearness sake I deal with the work in six sections: (1) New Houses, (2) Alterations and Additions, (3) Churches, (4) War Memorials, (5) Other Buildings, (6) Details in all materials.

(1) NEW HOUSES.

His first commission for a new house came in 1894, and was quickly followed by a number of others. All were small, and their design was based on English domestic tradition with a touch of Norman Shaw. They had, however, a definitely

Scots flavour and a fresh treatment of detail which stamped them with their designer's individuality. Early in this century Lorimer was able to prove that he could work as happily in the English as in the Scots vernacular. Of country houses built about that time in Surrey, Buckinghamshire and Cumberland, the last named was the most important. Brackenbrough is a fairly large house on a Z plan of the type familiar to any one who still studies Norman Shaw's work. However uncivilised it appears to those who have been brought up in the symmetrical Georgian tradition, it will repay attention for its convenience of arrangement. The exterior is treated in that modified type of Elizabethan which is typical of the north of England. Plans and elevations may be seen in the *Country Life* Supplement for 27 September, 1913.

We now come to a group of Scots houses, and it should be noted at this point that the traditional

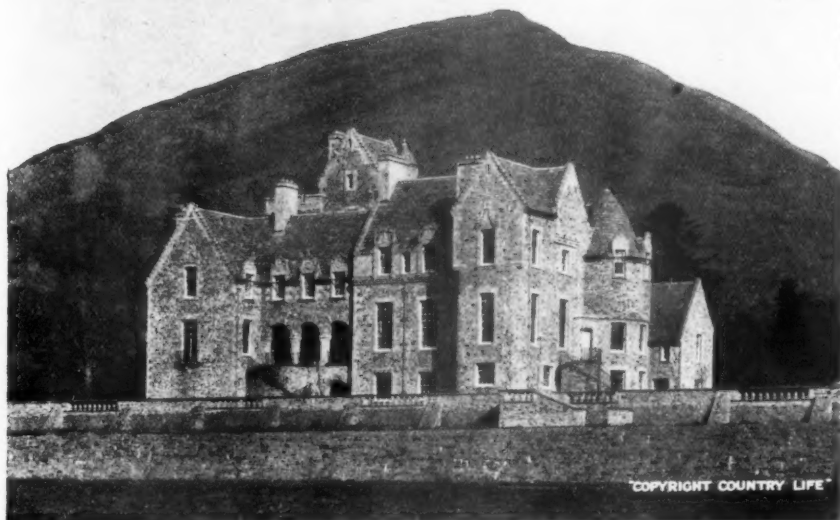


FIG. 2. ARDKINGLAS. North-west Front

plan of the Scots house of the second half of the seventeenth century was to have all the principal rooms on the first floor, an arrangement not uncommon in France and Italy, but abandoned in England at a comparatively early date. Lorimer adhered to this national tradition for all his larger houses in Scotland, but modified it so that the self-contained block reminiscent of the fortress divided itself into a main building still vertical in character with contrasting low buildings beside it.

His first fairly large house in Scotland was Rowallan in Ayrshire. It was built about the same time as Brackenbrough, of which I have spoken, and is as definitely Scots as the latter is definitely English. Plans and elevations will be found in Vol. 34 of *Country Life*.

Unlike Rowallan, which stands in a landscape pleasant but without notable feature, Ardkinglas (Figs. 1, 2, 3, 4, 5) is in typically highland scenery. The site is romantic and Lorimer naturally hailed the opportunity of building a house to chime with it. I think you will agree that in this case the

harmony is at least as happy as any contrast could have been.

The plan, no less than the situation, differs greatly from that of Rowallan. Here we have a lower hall intervening between the entrance porch and the staircase—the walls of both in ashlar prepared for polishing but not polished. On the left is the room which was the proprietor's own, and I need not tell you that the treatment of the oval form is charming. Balancing the little porch by which it is entered is a roomy pipe and tube shaft with access ladder and floor gully. This device Lorimer never omitted in a house of any size.

The billiard room is entered on the level of its raised dais. The offices are ample and conveniently planned. On the principal floor are the general reception rooms and family bedrooms. On the second floor exclusively bedroom and nursery accommodation. It can be seen from the photograph of the entrance front how the building piles up, the low entrance block, the main house, and then the tower. The walls are of local granite of

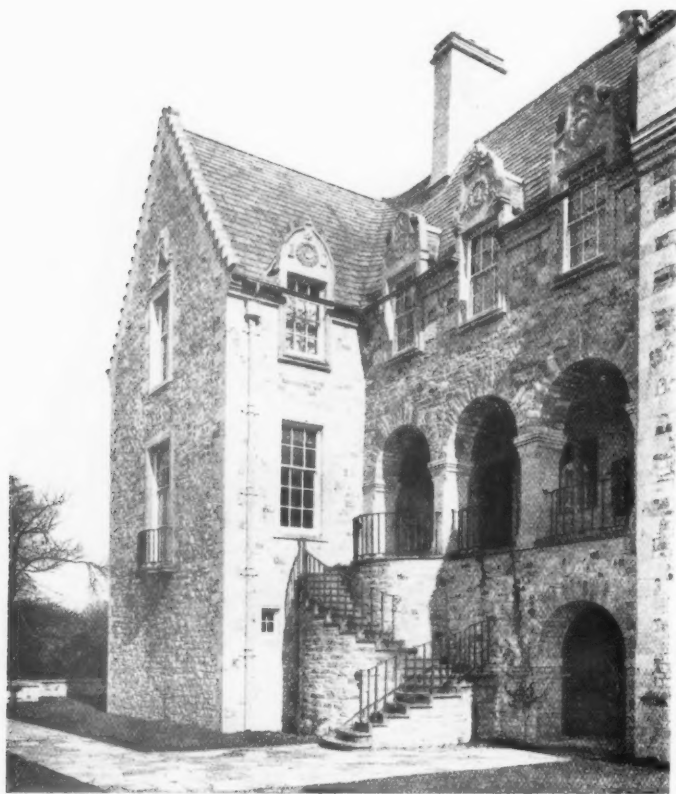


FIG. 3. ARDKINGLAS. Loggia

varied colour—predominantly greenish grey with orange spots and streaks. The dressed stone is a warm cream. The roofs are of Caithness slate—brownish, bluish, and like the walls, with flushes of orange. Note the fine slater work, the perfection of the swept valleys, and the easy way in which the circle rises to a point from the straight. The photograph of the north-west side shows the house against the hill, and another photograph shows the loggia and the stairway to the garden, and incidentally gives a good view of the Dermer heads. The illustration of the interior of the saloon is inadequate in its suggestion of the actual size of the room (45 feet by 22 feet, I think), but otherwise it gives an excellent idea of the doorway, mantelpiece, panelling and plasterwork. The

upper hall is like the lower hall and staircase—almost austere in its stone walls and arches.

The next house is Formakin (Figs. 6, 8, 9). It has aspects peculiar to itself. The owner is a collector of pictures, tapestries, rugs, furniture, silver and other objects—all of rare quality—and his demand was for a house which should, without becoming a museum as collector's houses are apt to do, offer definitely suitable settings for the more important specimens. The exterior was to be seventeenth century Scots, and the interior, in addition to its primary function, the last word in convenience of arrangement and fitting. The shell was completed in 1914 but, strangely and unfortunately, the interior has not, to this day, been finished.

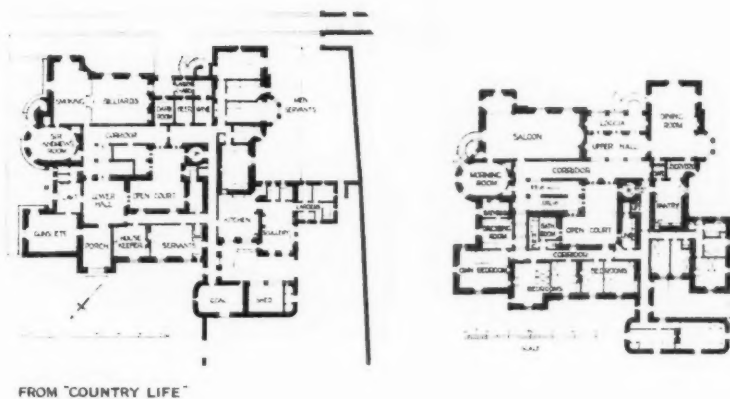


FIG. 4. ARDKINGLAS. Ground and First Floor Plans

We drive into the flagged forecourt. On the right is the front door, and at the side the luggage door. On the left of the archway (Scottice Pend) is a room whose very name must send a thrill through the collector—the unpacking room. On the ground floor of the house, as at Ardkinglas, are the billard room and business room. On the principal floor the great chamber, about 50 feet by 25 feet by 20 feet high, built specially for the noble set of fifteenth century tapestries, called the "Conquest of India." The dining room is interestingly lit by windows on three sides, and the rug room is designed to display a Persian rug which is one of the finest in Europe.

The view of the exterior shows a setting of the house, traditionally Scots, for which Lorimer had a strong feeling; on the one side the park, so that cattle or horses can come up actually to the house; on the other side (which we do not see) the garden. The bothy includes more than its Scots title implies, since there is not only housing room for the unmarried outside servants, but in the same building power house, garage and stables. The entrance lodge is of double form, a type that, with variations, Lorimer used a good many times.

That is all that time allows me to show you of new houses, but, as you can no doubt imagine, their actual number was large. I do not burden you with names which can only confuse the impressions of an account so compressed as this necessarily is.

ALTERATIONS AND ADDITIONS

We now come to his treatment of alterations and additions, problems which, when houses of marked character are involved, call for as high a quality of imagination as any new building. I pass at once to his earliest important addition—that at *Lympne Castle*, Kent, in 1906 or 1907. The Castle was almost a ruin, but enough of it was left to allow of its restoration on its old lines. The interior had to be brought back to its original disposition, and a new building provided which should give the conveniences of a modern house and the full benefit of the unique view. The plan shows how these requirements were met. The apartments in the original block all look due south to the sea a couple of miles away. In the addition the bay of the dining room extends this to the west, and so Romney Marsh from end to end is spread below the eye.

The addition is joined by an 8 feet corridor to the Castle proper—one might say the two link arms without jostling one another. The whole site is cramped, and the road, less than 200 feet from the Castle, overlooked everything. Alongside it, therefore, Lorimer put up a building detached from the rest of the house, which comprised offices with, above, some rooms for bachelor guests. By this means he ensured privacy to house, lawns and garden, and gained accommodation without overloading the part of the house next the Castle. The resulting effect is that the

mass of the Castle is enhanced rather than detracted from, by the modern work.

You will find illustrations and a description in *Country Life*, Vol. 28.

Among the larger alteration jobs was Marchmont, in Berwickshire, begun in 1913. Lorimer made extensive alterations, and substituted for what had been the stable wing a Music Room of noble dimensions, 65 feet in length by 30 feet in breadth. You will find plans and illustrations in Vol. 57 of *Country Life*.

Than between Marchmont, in the full bloom of the classical revival, and Balmanno, the purely Scots house of the late seventeenth century, no greater contrast could well be found. To preserve the unspoiled exterior of Balmanno while bringing the ruined interior to a reasonable degree of convenience was Lorimer's problem. I show you the plan and layout after alteration. Three new windows and a blind window opened out comprise the whole of the changes on the old exterior.

The new service wing is kept low to form a contrast to the high main block. The charming garden and grounds are neighbourly to the house; the double lodge acts as a screen, and the impressive view of the old building breaks suddenly on the visitor as he passes through the arched gateway.

I recall to you my plea that those to whom this kind of building is strange should consider it in terms of forms and masses and their relation to one another. It is for you to judge whether Lorimer's part in the picture is worthy of this astonishing seventeenth-century achievement.

The new building is about 16 feet to the wall-head, the old about 60 feet to the parapet of the tower. You may note the characteristically bold scale of the new weather vane, and I am sorry there is no slide to enable you to enjoy the vigorous humour of the stone grotesques on the ridges of which one is here just visible.

In the interior Lorimer indulged himself in his fancy for native timber. There is panelling in oak, ash, larch, sycamore, and, I think, Scots fir, as well as in sequoia and mahogany. All, you may be sure, are treated with sympathy and understanding, whether for the scale and figure of their grain or for their colour and surface. But the rooms have not lent themselves to photography so happily as the exterior, and their charm is rather inadequately conveyed in photographs. The general treatment is based on what would be found in a Scots house of the period, but mouldings,



FIG. 5. ARDKINGLAS. Upper Hall

niches, plasterwork and inset pictures all have a touch of Lorimer which distinguishes them from the pure tradition. In the bedroom (Fig. 7) the panelling is simpler. The raised hearth and the heavy steel curb are both characteristic. In these rooms, as in others, there are floors of native oak in planks of irregular width from about three up even to fourteen inches, and I think interiors of this type gain quite definitely from the freedom and strength suggested by such a groundwork.

CHURCHES

We pass on to churches.

The Thistle Chapel (fig. 11), set at the south-east

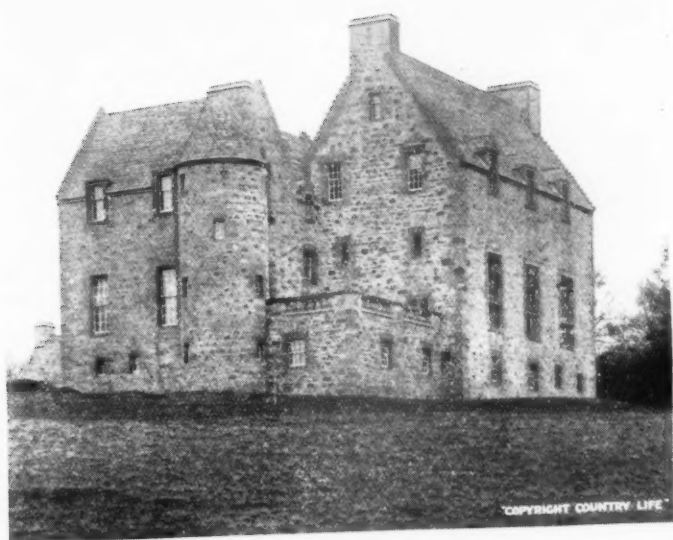


FIG. 6. FORMAKIN. From South-east

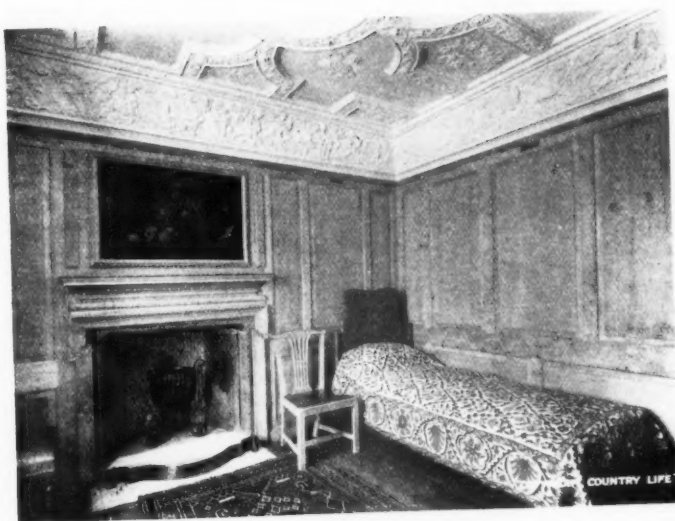


FIG. 7. BALMANNO. A Bedroom

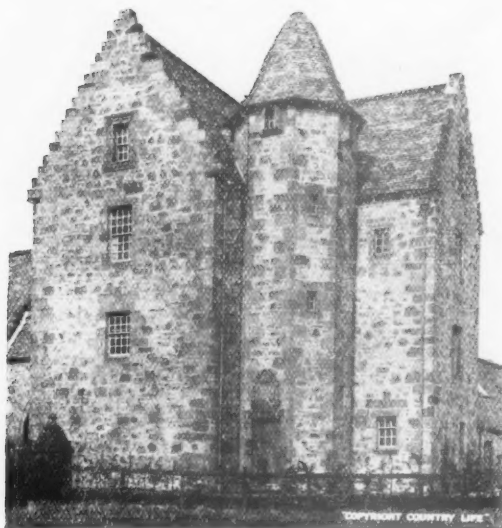


FIG. 8. THE BOTHY, FORMAKIN

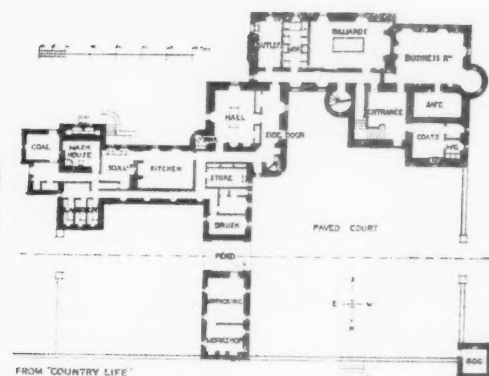


FIG. 9. FORMAKIN. Ground Floor Plan

corner of St. Giles's Cathedral, Edinburgh, nestles in so closely to its larger neighbour that the two buildings are served by a common porch lying between them.

The Chapel was opened in 1911. The Order of the Thistle is the Scots equivalent of the Garter. Its numbers are limited to 19. Its

services are Presbyterian in form, and the ritual requirements are practically nil. Nineteen stalls for the Knights, the Chair of Investiture, and a Chair and Lectern for the Chaplain comprise, therefore, the whole of the fittings, for which, obviously, a very small area was sufficient. The Chapel is only 38 feet by 18 feet, but Lorimer's love of vertical effect made it 42 feet to the vaulting. To this height it owes its dignity and to its rich detail its interest. Note the batter on the buttresses, increasing the apparent height of the little building, the window tracery and the large scale of the detail—all in the Scots tradition. In the interior you see the roof, the main bosses of which have symbolic or national significance. Every stall has its plate in enamel and is crowned by the achievement of the Knight to whom it belongs. To give you an idea of the vitality and variety of the carving would take a longer description and more slides than would fill the time allowed for the whole paper. So I will not attempt the impossible. The floor is of the greenish-grey Ailsa Craig granite with insets of pure green Iona marble. You will find illustrations in Vol. 30 of *Country Life*.

We now pass to a church which, in its severe simplicity, offers a striking contrast to what we have just seen—St. Peter's, Falcon Avenue, Edinburgh (fig. 10). The plan shows how the church is set back from the street, with the Presbytery and the Sacristan's House forming an entrance court to it. Note that while the Sanctuary proper is in the apse, the space necessary for ceremonies and for the seating of those engaged in them is brought forward into the body of the church and in front of the Sanctuary arch. The apparent spaciousness of the interior is thereby greatly increased. The marble floor on which the priest stands to administer Communion has a Lorimer touch at once humorous and significant. St. Peter is symbolised by a cipollino sea in which swim fish of Egyptian green and Siena yellow. The building was to have as much Italian flavour as was compatible with its local surroundings and with low cost. Externally this has been achieved by the court above-mentioned, by a campanile, with its banding of red stone, and by using Roman tiles and keeping the roofs at a low pitch. The interior is built in a local brick, showing its own red in the plinth and white-washed above. The nave is over 100 feet long

by 44 feet wide, the height of the arcade is 34 feet, the height to the roof 44 feet. Here again a certain Italian impression is produced.

Lorimer built other new churches, including the Chapel of Stowe School, and made important restorations in Dunblane Cathedral, Paisley Abbey, and the noble Church of St. John, Perth. In these three you may see choir stalls, screens, organ cases, pulpits, etc., whose woodcarving on its much larger scale rivals the Thistle Chapel in spirit and vitality. And all the crafts in all materials, from enamel up to stone and bronze, are represented, including much stained glass.

WAR MEMORIALS

Lorimer did a lot of work for the War Graves Commission—cemeteries in Italy, Egypt, Macedonia and Germany, a war memorial at Salonika, and the naval memorials at Chatham, Southsea and Devonport. There are many others both in England and Scotland, and I would mention especially that at Paisley. But all are completely overshadowed by the Scottish National War Memorial.

The retention of the outside walls of the old building was insisted on and this now forms the Hall of Honour. The porch is new and also the apse, which is the shrine.

In the Hall of Honour each regiment has its own recess with its proper insignia and its roll which the public can consult. There are besides monuments to every branch of the Services, regular and auxiliary. The windows illustrate contemporary life during the war, alike naval, military, and civil.

The shrine sums it all up. Above is the great hanging figure of St. Michael and the rich stained glass—here of a devotional nature. Round the walls is the bronze frieze in which are represented every grade and unit of the Services. In the centre, the Stone of Remembrance stands actually on the living rock on which the Castle of Edinburgh is built, and bears the casket of steel in which is enshrined the complete roll of the 100,000 Scottish dead.

I feel that Lorimer's work here was greater than the mere physical fact. Through his building he has, for contemporary men and women, given voice, so to say, to an emotion lying deep down in their hearts.

There is no other explanation of the visible impression made on the crowds who pass through or of the comments which are on record from

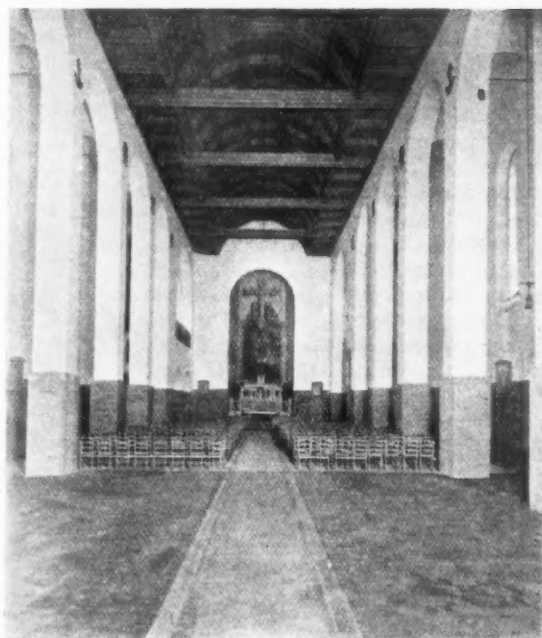


FIG. 10. ST. PETER'S CHURCH, Edinburgh

individuals. Gentle and simple, from all parts of the world, including Germany, seem to unite in feeling that something they could not express is here expressed for them. Satisfaction in a commemoration worthy of the fallen, the sense of a serene but solemn peace following strife, for some, a very personal if undefinable consolation in bereavement—such appear to be the main aspects that touch the hearts of so many of the visitors. To feel a world-wide sentiment and to be able to express it seems to me an achievement transcending architecture as such, and I am willing to leave to future generations any estimate on purely technical ground of the Scottish National War Memorial. If I show you no more views, it is again a matter of time. Those of you who wish to refresh your memories may turn to the very fully illustrated Supplement, issued by *Country Life*, with its admirable description by the late Lawrence Weaver.

OTHER WORK

I regret there is no time to deal with my fifth heading "Other Work." Buildings for universities, for schools, for industrial and commercial

undertakings there are—some of them of considerable importance. But I must pass them. I class them together in order to say that on this more utilitarian side Lorimer was not found wanting. The satisfaction they have given to clients suffices to show how Lorimer's love for beautiful things was balanced by a keen interest in practical matters. For example, as far back as 1907, he was using steel shelving for the St. Andrews University Library. He adopted freely all modern devices, from ferro-concrete or artificial stone to sound-proofing plaster and panel-heating. From the scullery sink to the drawing room door-handle he considered every object on its merits and, when the market offered nothing he thought good enough, he would get his own pattern made, which the size of his practice enabled him to do at a very small, if any, extra cost to his clients.

Thus, for example, he had his own type of towel rail, and his own type of bath—and very practical they both are. Most of you, I dare say, know that what has for many years been considered the best form of wash-down closet was designed by him. His sense of humour dictated that his name (in anagram) should appear on this humblest of appliances.

This love of the practical side of things made

Lorimer a close student of the possibilities of all materials, and his early and constant employment of the crafts led to a clearer and deeper understanding than can ever be attained by an architect

who treats them as luxuries fit only for big jobs. Not one of those small houses which he began to build in 1894, the cost of which was £1,000 to £1,200, but had its decorative date or owner's crest or other device worked in stone, its pierced panel or carved finial on the stair, its wrought iron gate or balcony, very simple but with some flower or bird growing unexpectedly from it, its touch of hand-modelled plaster above a mantelpiece or in the ceiling of a bay window, and, probably least looked for of all, some little bit of glowing stained glass. Nothing was ornament stuck on. All seemed to grow inevitably from the building and was placed with that

sense of style which was part of Lorimer's natural equipment.

His office was in Edinburgh where, as it chanced, the standard in the crafts was above the average. It was natural therefore that he should employ the people around him, and gradually, from helping on to a still firmer basis such crafts as already existed, he encouraged others, for example, enamelling and embroidery and, throwing the net still wider,



FIG. 11. THISTLE CHAPEL. From South-east

was largely responsible, directly or indirectly, for attracting to Edinburgh, where they are now flourishing, stained-glass work, tapestry and silk weaving, bronze casting and the rest.

The point of all this is that Lorimer's work was not merely a matter of buildings. As in the Scottish National War Memorial he has satisfied a need in the heart of his contemporaries, so in this resuscitation of the crafts he has brought the possibility of the joy of creation to many individuals who otherwise would not have had the opportunity of expressing themselves.

DETAILS.

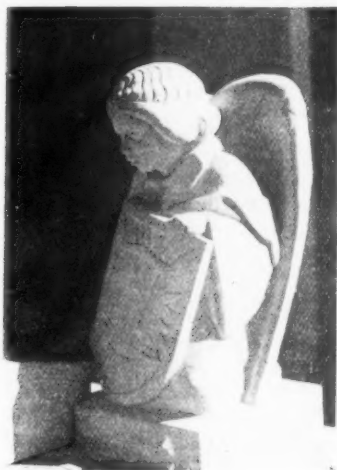
Lorimer's details combine a cheerful freedom with that sense of style which I have mentioned before as an essential part of his make-up. His furniture was eminently sensible. He accepted tradition and the cabinet-maker's knowledge of requirements, but he let his own fancy play over these sometimes rather dry bones and clothed them with a fresh and often piquant life. Nothing pleased him better than to get a client to buy a

panel of fifteenth century tapestry. He would make that, and not anything of his own, the note of the room, but the room became a worthy and individual setting for it and the result was a coherent whole.

To sum up. The facts put before you show Lorimer's qualities. In themselves, no one of them may have been very remarkable, but I think you will agree that such a total in combination is distinctly rare. Full of imagination and initiative, Lorimer was the most persistent and methodical of note-takers on everything that interested him. Full of humour, he was intensely serious. Bursting as he often was with enthusiasm, he would temper it to the client's purse and his own footrule. A very Martha, as I have told you, in household details, he could create the Scottish National War Memorial. We need make no attempt to anticipate what niche in the Architects' Pantheon posterity will allot to him, but I think no one can fail to feel that the contemporary world is sadly the poorer for his all too early passing.

[The Vote of Thanks and Discussion on Mr. Deas's Paper will be published in the next Issue of the JOURNAL]

FIGURE FROM
THE MORTON



MEMORIAL,
DARVEL, Ayrshire.

Persian Architecture

BY K. A. C. CRESWELL [*Hon. A.*].

THE ACHÆMENIAN PERIOD.

THE history of Persian architecture begins with this period but, of the earliest monument known, the palace of Cyrus at Pasargadae (559 B.C.), only a column remains, and of the palace of Darius at Persepolis (521 B.C.), only the foundations of the bases of the columns. We are, however, on sure ground when we come down to the reign of Xerxes (485-465 B.C.).

Achæmenian palace architecture was a columnar trabeated style, the chief feature being the *apadāna*, a grove of columns between four walls, preceded by a colonnaded portico flanked by square towers.

The columns are more slender than anything known in Greece, they are much more widely spaced, and the number of flutings is greater. The bases are generally bell-shaped (Fig. 1) and the columns about 10-12 diameters in height ($2\frac{1}{2}$ diameters more slender than those of the Erechtheion at Athens). The number of the flutings varies from 32 at Istakhr to 40, 48 and 52 at Persepolis, against 16-24 in Greece. The total height attains as much as 68 feet 9 inches (Persepolis). The intervals between the columns are considerable, varying from 4 to 6 diameters or slightly more, against $1\frac{2}{3}$ ths to $2\frac{2}{3}$ ths for Greece.

The capitals of the columns are composed of volutes set vertically and surmounted by the foreparts of a pair of bulls set back to back; on their common back rests a corbel which projects in front of the column so as to carry the transverse beams of the roof (Fig. 1).

No palace has preserved its entablature, but we know what they must have been like, thanks to the façades, imitated from palace façades, carved on the rock-cut tombs at Takht-i-Jamshid and Naqsh-e Rostam.

The roofs were flat and of timber. At Susa, cedar was used and the words of Quintus Curtius ("multa cedro ædificata erat regio," V, vii, 5) have been confirmed by Dieulafoy who found traces of charred cedar in the ruins, and by the fragments of an inscription of Darius saying that the cedar wood came from Syria.* These flat roofs were covered by a thick layer of mud, mixed with chopped straw and beaten solid.

The doorways and window-frames were sometimes great monoliths, but the walls were only of mud brick bonded into grooves left in the door and window-frames. The doorways were decorated with the Egyptian reed cornice.

* De Morgan, *Mém. de la Délégation en Perse*, XXI, pp. 12-13.

Achæmenian palaces, after the Assyrian fashion, were set on great platforms approached by monumental staircases, the wall at the side of the staircase being decorated with bas-reliefs illustrating triumphs, processions of prisoners, envoys bringing gifts, etc. At Persepolis the retaining wall is of massive blocks of stone joined with iron dovetail cramps, at Susa of brick faced with faïence.

ORIGINS.

The Persian Order (Fig. 1) is closely related to archaic Greek work, e.g., at Ephesus and Naukratis, but the remarkable feature of bulls at the summit appears to have been original. The flat timber roof resting directly on columns was probably derived from Median huts (Fig. 1 (3)).

Such a roof, set directly on columns, was employed for the Great Mosque of Baghdād in A.D. 764, and was frequently used for mosques during the first three centuries of Islam. It still survives in the modern Persian *talār*, an open portico in front of palaces, e.g., Chihil Sutūn. The reed cornices were derived from Egypt†, and the great raised platforms from Assyria and Babylonia.

SASANIAN PERIOD (A.D. 226-641).

Of this period the two principal monuments are the palaces of Firūzābād and Sarvistān, which may be placed in the third and fourth centuries respectively. They present the most complete contrast to the Achæmenian monuments, for instead of a columnar trabeated style, we have massively constructed buildings covered with vaults and domes.

Firūzābād measures 170 by 320 feet. It is constructed of broken stone or rubble, bound by a good mortar of lime mixed with sand. The plan (Fig. 2) is striking for its noble simplicity. All the spaces shown are covered with elliptical domes, each 45 feet in diameter with an eye in the centre to admit light. Remains of the stucco decoration show that the outside was ornamented with reed-like pilasters of semi-circular section with panelling between. In the interior the arched doorways are set in moulded frames surmounted with the Egyptian reed cornice, as at Persepolis and Susa, but the composition has degenerated.

† "The Persians and Cambyses not only pillaged Egypt, tore off gold, silver, ivory and precious stones from her temples, but burnt them down. Report says that the famous palaces of Persepolis, Susa and Media were built after all this wealth had been conveyed to Asia, together with Egyptian craftsmen."—Diodorus Siculus I, xlv, 4.

Sarvistān is much smaller (120 by 140 feet) but it is better built, the walls are of stone and the domes of brick, but practically all the stucco decoration has disappeared. Like Firūzābād it has three domes, but they vary in size, are differently placed, and the plan is more complex. The vaulting arrangements show a great advance in knowledge. In order to lessen the thrust of the elliptical barrel vaults, and to avoid very thick side walls, piers are built within the walls, thus forming a series of recesses. These serve to support semi-domes over the recesses between them, and above these semi-domes rises the central elliptical vault, its span being reduced by this arrangement from 26 feet (the extreme width of the hall) to about 17. The semi-domes are set over the rectangular recesses by means of squinches (Fig. 3).

The domes of Firūzābād and Sarvistān are all set over square rooms by means of squinches, *i.e.*, arches which are set across the four corners of the square so as to convert it into an octagon; on this octagon rests the dome.

The squinch was a fundamental discovery in architecture for which Persian architects must receive the credit. The dome had been known long before but

its use had been very restricted, until a device was discovered whereby it could be set over a square chamber, for a complex building cannot well be composed of circular rooms. The Persians therefore played and, as we shall see, continued to play, a vital part in the evolution of domical construction.

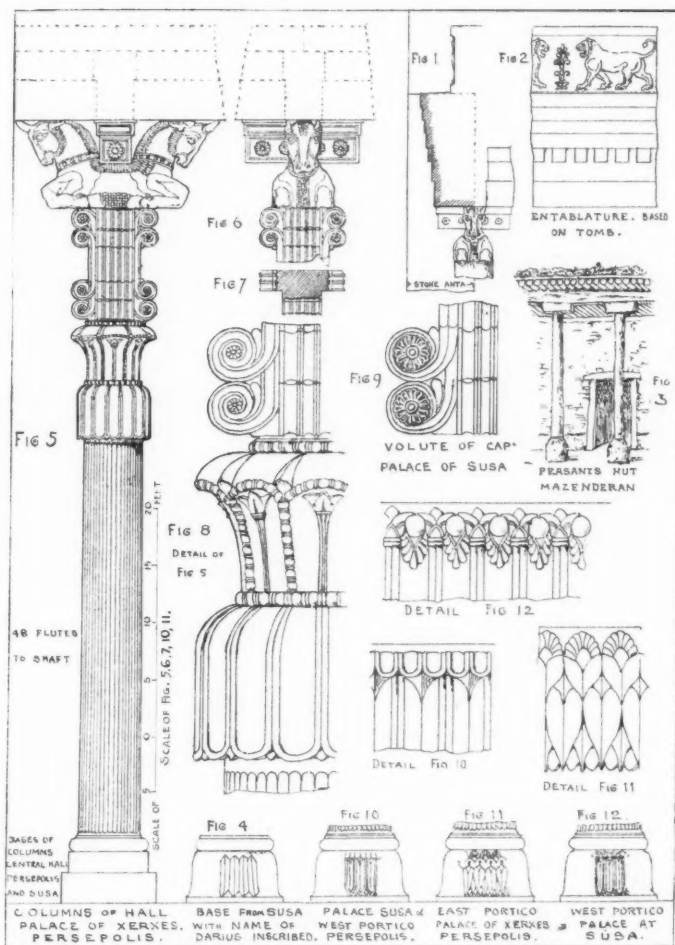
Another important feature not found in Assyrian, Babylonian or Achaemenian architecture, occurs in these two palaces, viz., axial planning.

As for the fundamental structural differences between Achaemenian and Sasanian architecture, it seems probable that it was partly due to the loss of control of those forest

regions, *i.e.*, the Lebanon, from which the Achaemenians, as we have seen, drew their supplies of cedar wood.

THE MUSLIM PERIOD.

After the death of Muhammad (A.D. 632) Mecca only remained the seat of the Khalifate until 661 when the Umayyad dynasty arose and made Damascus its capital. This dynasty fell in 750, and was succeeded by the Abbāsids who made Baghdad their capital. This transfer was of immense importance for the history of Muslim architecture, for up till then the influence of Syria had dominated and all the



From *Phénix Spiers*

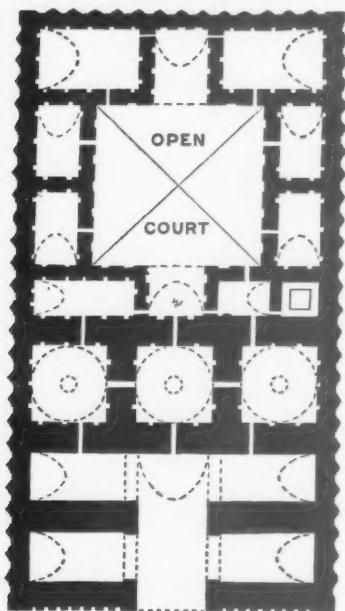


FIG. 2. PLAN OF PALACE OF FIRUZĀBĀD.
From Dieulafoy

Umayyad monuments known to us are governed by it. But just as the transfer of the capital of the Roman Empire from Rome to Constantinople displaced its centre of gravity towards the East, so this transfer of the seat of the Khalifate displaced the centre of gravity of the Muslim Empire from the Hellenistic to the Iranian sphere of influence. Hence the great difference between the cut stone monuments of the Umayyads and the brick and stucco monuments of the early Abbāsids.

The ancient *apadāna* exercised a powerful influence, and the Great Mosque of Baghdād (764) and the Great Mosque of Sāmarrā (847) had flat roofs resting directly on columns (or piers in the case of Sāmarrā) without arches, likewise the mosque at Saghāniyān. Some of them even had wooden columns, and the brick columns of Nāyin (early tenth century) with their flat slab-like impost blocks, are surely derived from wooden prototypes. The latter is an arcaded courtyard type of mosque, decorated with wonderfully preserved stucco ornament related to that of Sāmarrā, but, instead of a flat timber roof, each bay is covered by a shallow brick dome.

Considerable progress was made in the eleventh century in vaulted and domed construction, *e.g.*, that part of the Masjid-i Jum'a at Isfahān which was built by Malik Shāh (1088), which shows amongst other

things, that the elaboration of the simple squinch (Fig. 4) began sooner in Persia than elsewhere.

In the twelfth and thirteenth centuries faience decoration, both in the form of tiles and mosaic, attained a degree of beauty and splendour never seen before. Splendid calligraphic friezes of lusted faience surmounted dadoes composed of star tiles in golden brown lustre on a white ground, and mihrābs were executed in the same material, *e.g.*, the famous Preece collection mihrāb from Kāshān, now in Berlin.

An important change took place in the mosque plan, apparently in the thirteenth or fourteenth century. The simple arcaded courtyard type gave way to one with a great vaulted *ivān* (=Arabic *ḥawān*) in the centre of the arcades on each side of the court, *e.g.*, the Great Mosque at Verāmin, etc. It is not yet possible to say how this type arose, or when, for



FIG. 3. INTERIOR OF HALL. PALACE OF SĀRVISTĀN.
From Phené Spiers

hitherto it has been extremely difficult, in fact almost impossible, for non-Muslims to enter Persian mosques in actual daily use.

Persian mosques almost always have a monumental portico, consisting of a deep rectangular recess roofed by a semi-dome resting on stalactites. A fine example

is the monumental portal at the south end of the Meidān at Isfahān leading into the Great Mosque of Shāh Abbās. Such portals are a development of the Bāb at 'Āmma (836) of the Khalif's palace at Sāmarrā, where this feature may be seen in its simplest form, viz.: a rectangular entrance-bay roofed by a semi-dome resting on two squinches.

Persian minarets vary but slightly in form: a tall slightly tapering cylindrical tower (earliest example—the Minār-i-'Alī at Isfahān, built 1072-92), with a little covered balcony near the top for the man who makes the call to prayer. These tall shafts are decorated with geometrical patterns and bands of inscription, either executed in the brickwork itself, or in faience mosaic, or in glazed tiles of dazzling brilliancy. Except in the earliest mosques there is usually a pair of them, flanking the frame (*pishtāq*) of the great arched entrance to the sanctuary, the thrust of which they help to take.

Persian stucco ornament culminated in the fourteenth century, its greatest masterpiece being the mihrāb (A.D. 1310) of Sultan Muhammad Khudabanda in the Great Mosque at Isfahān (Fig. 6).

The elliptical Sasanian dome gave way, under Islam, to the hemispherical form and later on to the pointed, the finest example being the beautiful dome

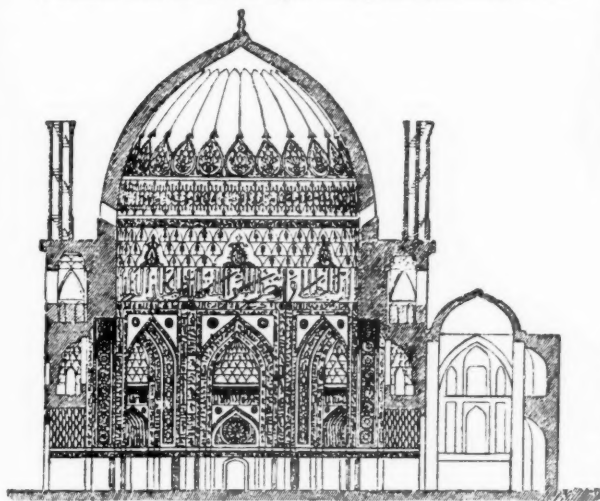


FIG. 5. MAUSOLEUM OF SULTAN MUHAMMAD KHUDABANDA AT SULTANIYA

of the Mausoleum of Sultan Khudābanda at Sultāniya (A.D. 1307) which is the largest in Persia, being 84 feet in diameter (Fig. 5). The Timurid period, however, witnessed a new type of dome, consisting of

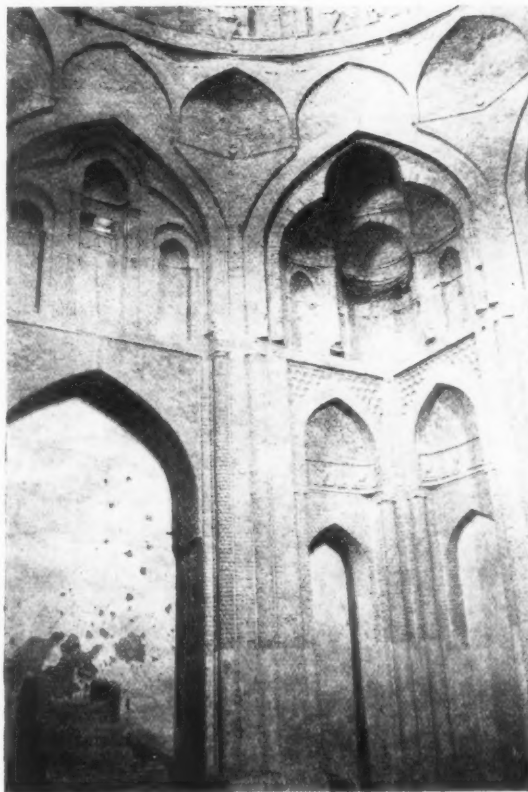


FIG. 4. GREAT MOSQUE AT ISFAHAN, PENDENTIVE OF MALIK SHAH

Photograph by Dr. A. U. Pope

the former type covered over by a very slightly bulbous shell, which is superimposed on it, leaving a large space between. This type only appears towards the end of Timur's reign (d. 1405). It seems probable that this type (Fig. 7) was derived from domes composed of an inner and outer shell of wood, such as that which once rose over the transept of the Great Mosque at Damascus (described by Ibn Jubayr in 1184).^{*} Moreover, we are expressly told in the *Institutes of Timur* (1787 ed., p. 103) that the workmen who were spared from the sack of Damascus were brought to Samargand and employed on Timur's buildings. Wood being scarce, they built the dome of his mausoleum (Fig. 7) in brick, as nearly as possible like the dome of their own great

^{*} See my article in the *Indian Antiquary* for 1915 (Vol. XLIV).

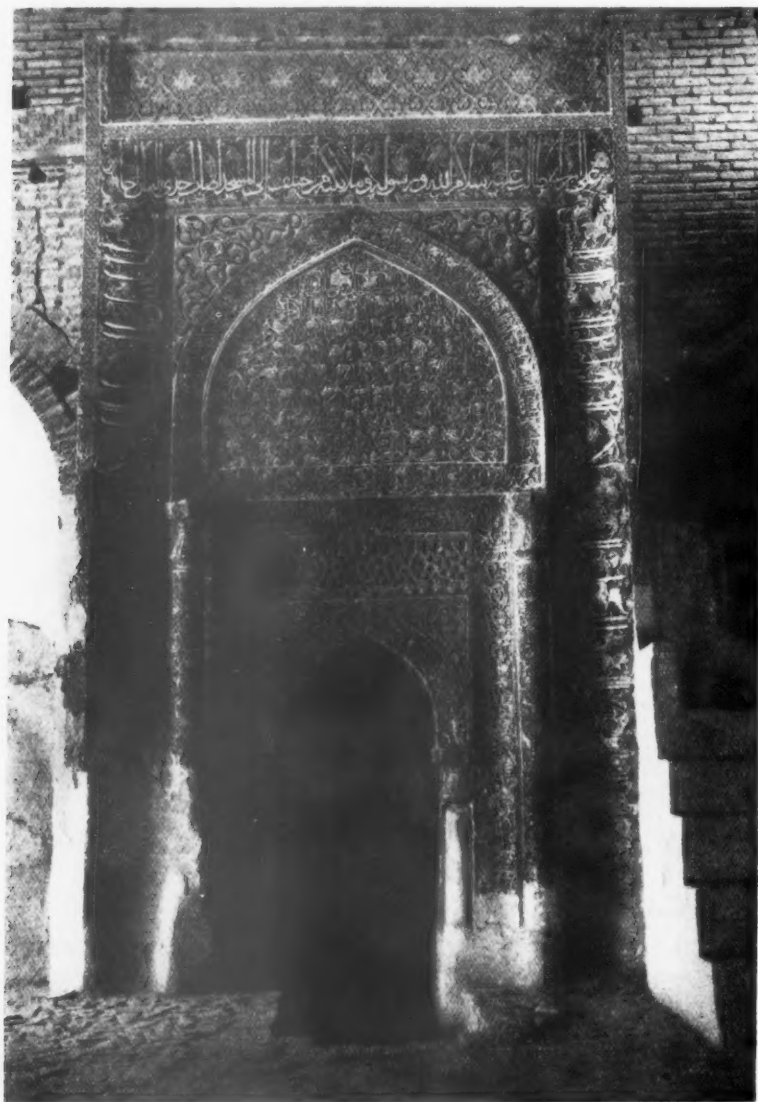


FIG. 6. MIRAB OF SULTAN MUHAMMAD KHUDABANDA IN GREAT MOSQUE AT ISFAHAN

Photograph by Dr. A. U. Pope

mosque. Fig. 8 shows a section of the dome of Timur's mausoleum. The dotted line produced from C shows the extent of the projecting part. Now

the centre of gravity of the projecting part is roughly at B, and this part therefore will act with leverage $\frac{AB}{AC}$

about C, in direction A D. Now the thrust K of the upper part E is in the same direction, more or less, and thus the projecting part adds to the difficulty instead of helping matters. This is shown when it comes to practical work by the interior construction of this dome, which has a series of tie-bars T, fixed at their extremities in the lower part of the sides of the dome and meeting in the centre, where they are carried by a pile of masonry M. They are an imperative necessity to neutralise the unscientific shape chosen for the construction of the dome, and by their very existence refute Saladin's theory that "la forme bulbeuse présente alors l'avantage de conserver sensiblement, à l'aplomb de l'arc du mur du tambour, la projection du centre de gravité du segment le plus important de la coupole, donc de ramener la poussée à l'intérieur du mur."

After Timur's death the double dome was soon spread over Persia, beginning with Khurāsān in the east, and then Tabriz in the west. In the sixteenth and seventeenth century nearly all monumental domes are of this type, but there are nevertheless notable exceptions, e.g., the mosque of Shaykh Lutfullah at Isfahān (Fig. 10) built in 1621. Under eighteenth century decadence it took an increasingly bulbous form, in fact, as Saladin remarks "the greater the swelling of the dome, the later the date at which it has been built."

The Timurid period was a truly great one in architecture as it was in miniature painting. It was distinguished by the planning

of mosques and madrasas with four great *eivāns* placed axially, by the use of decorative schemes composed of enamelled bricks and plain brown bricks of fine quality juxtaposed with wonderful effect, by the use of faience mosaic which persisted throughout the fifteenth century (e.g., the Blue Mosque at Tabriz and the Musallā at Herāt), by the use of dadoes of Marāgha marble, and by the double dome with slightly swelling outline.

The Timurid period was followed by the Safavid (1502-1736). Shāh Abbās the Great (1587-1628) was one of the greatest rulers, and certainly one of the greatest builders, Persia

ever had. Perhaps his most remarkable achievement in this field was the wonderful capacity for town planning, which he displayed at his capital, Isfahān. The scheme included the Great Meidān surrounded by vaulted bazaars, with the portal of his mosque opening in the centre of the south side, the Ala-Qapu palace on the west-



FIG. 7. MAUSOLEUM OF TIMUR AT SAMARGAND

tern side, the avenue, over two miles long, known as the Chahār Bāgh, with its beautiful plane trees, its bridge, etc.

His great mosque, the plan of which is remarkable for its clear, simple and harmonious disposition, has one remarkable feature, unique, I believe, in Persia, although frequently met with in Egypt, viz.: the ingenious planning of its monumental entrance, whereby the main axis of the mosque which, being directed towards Mekka, runs from N.E. to S.W., is accommodated to the axis of the outer portal on the south side of the Meidān, the axis of which runs from north to south (Fig. 9). This mosque, as may be seen from the plan, has four *eivāns* placed axially, the northern one being the rear half of the entrance. At the back of the three other *eivāns* is a great domed chamber with a mihrab on the Mekka side. The south-east *eivān* is flanked by two halls, each with eight dome-covered bays and a mihrāb at the end of each aisle. The whole building, including the main dome, is splendidly decorated externally with enamelled tiles and faience mosaic.

Under Shāh Abbās we find surface decoration in glazed tiles and faience mosaic side by side in the same building, e.g., the mihrab (Fig. 11) of the Mosque of Shaykh Lutfullah at Isfahan (A.D. 1621).

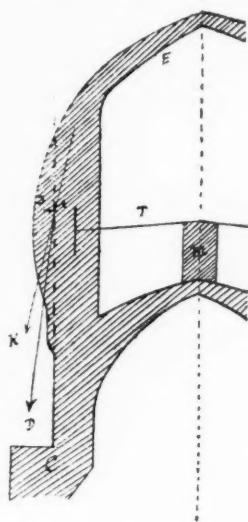


FIG. 8. MAUSOLEUM OF TIMUR, SECTION OF DOME

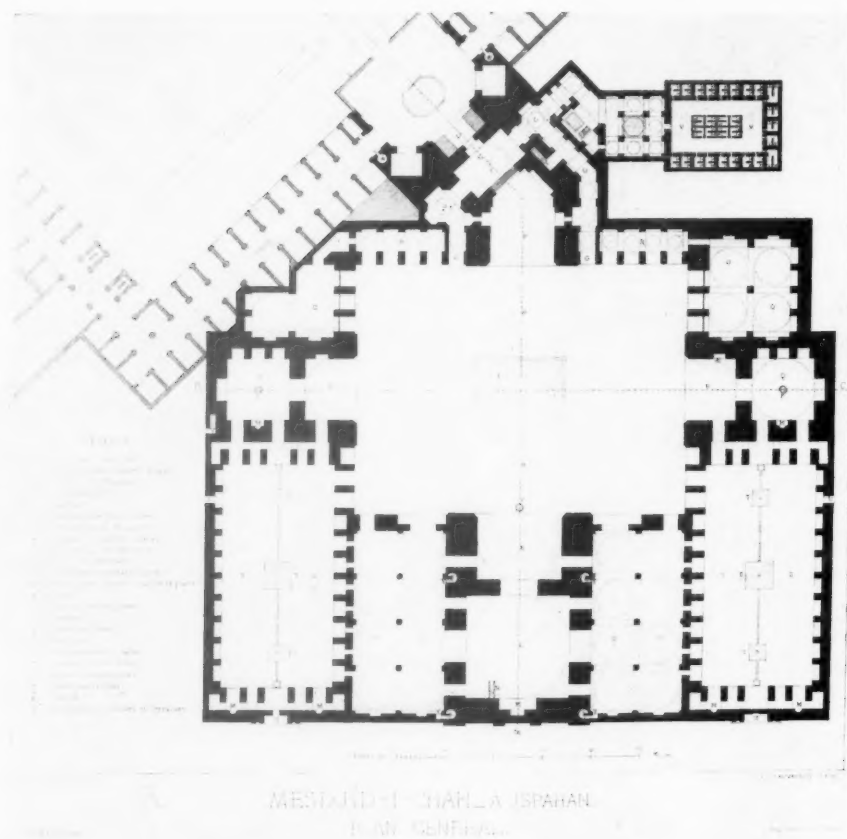


FIG. 9. MOSQUE OF SHAH ABBAS AT ISFAHAN. From Coste

Shāh Abbās was also distinguished for the number of public works, such as caravanserais and bridges which he constructed. Persian caravanserais are usually great rectangular fortified structures with corner towers, a monumental entrance, and a great courtyard within, surrounded by two tiers of cells, the lower for the pack animals and baggage, the upper for travellers.

In the seventeenth century, during the reign of Shāh Sulaimān, the custom arose of covering the domes of sacred shrines with plates of gilt copper, *e.g.*, the shrine of Imām Rizā at Mashhad in N.E. Persia. Chardin, who was in Isfahān in 1673, saw the plates being made; he says that they measured 10 by 16 inches, that there were ten crowns worth of gold on each, and that 3,000 had been ordered.

This innovation was so popular that quite a number of examples exist to-day: Mashhad-i Ali at Najaf, Mashhad-i Husain at Kerbelā (both due to Nadir Shāh), Imām Musā at Kāzmain (due to Agha Muhammad Khān Qajar) Fātima at Qūm, Imām Mahdi at Sāmarrā (both due to Fath Ali Shāh), etc.

Fine work was still being executed at the beginning of the eighteenth century, *e.g.*, the Madrasa (or theological college) of Shāh Sultan Husain at Isfahān, built 1700-1710, which consists of a nearly square court surrounded by two storeys of vaulted arcades (the upper containing cells for students) with a great *civān* in the centre of each side. Attached to it is a caravanserai which no doubt served to provide the college with a revenue. Shāh Sultan Husain rebuilt the Chihil Sutūn palace of Shāh Abbās, which had



FIG. 10. MOSQUE OF SHEAKH LUTFULLAH AT ISFAHAN
Photograph by Dr. A. U. Pope

been destroyed by fire, but the work shows a great falling off in quality, for Persian architecture was moving rapidly towards that decadence which was complete by the end of the century.

CONCLUSION.

Persia was certainly one of the great creative centres

of architectural development: for the science and skill shown in the construction of vaults, domes and pendentives, Persian architects must ever command our respect and admiration, and in the field of polychrome decoration on the grand scale their achievements still remain unrivalled.

The Exhibition of Persian Art

Through the kindness of the Chairman and Executive Committee of the International Exhibition of Persian Art and with the consent of the President and Council of the Royal Academy, it is hoped to make arrangements, in conjunction with the British Institute of Industrial Art, for a private visit to the Persian Exhibition for members of the R.I.B.A. and Fellows of the British Institute and their ladies.

The visit will probably be held on Friday, 6 March, between 9 and 11 p.m. There will be no charge for admission and light refreshments will be provided.

Members who desire to take advantage of this opportunity of seeing the Exhibition are requested to apply to the Secretary R.I.B.A., for tickets. As it may be necessary to restrict the number of tickets issued, members are requested to make early application.

Some Features of Persian Architecture

A LECTURE BY DR. ARTHUR UPHAM POPE

[Read before the Royal Institute of British Architects on Thursday, 15 January 1931]

THE PRESIDENT, SIR BANISTER FLETCHER, F.S.A., IN THE CHAIR

Concluding Portion

The Masjid-i-Jami is not one mosque, but rather an assembly of mosques and sanctuaries of various sizes and ages and types, varying in date from the eleventh to the sixteenth century. There are two noble domes and seven high and wide vaults, to say nothing of four great *iwans* and a wide area of cloistered vaults. Fortunately, there are some dozen inscriptions with dates in the building which have now been photographed, and are being studied, and which will make it possible to write something like a satisfactory history of this splendid structure. Throughout the unit of construction is the pointed arch.

Of course, in the mountains, valleys and in the timbered sections, the post and lintel construction was always maintained, but by and large, for the country as a whole, we may say that every type of building—from shepherd's hut to palace, from bazaar and mosque to fort and caravanserai—rests solidly on pointed arches.

But the arch is not merely a method of building. Its intrinsic beauty, which is probably one of the motives for its adoption, was early recognised by the Persians, and it was developed on a scale and with a graceful and expressive contour, and sometimes with a majesty of form, that is perhaps hardly equalled in architecture anywhere. Nowhere do we see the pointed arch on a more superb scale than in the portal and the vaults of the Masjid-i-Shah in Isfahan. The perfection of outline and grandeur that distinguished Achæmenian architecture is here realised in a new form that the ancient builders could never have anticipated. Throughout the mosque the pointed arch is the theme constantly repeated with dramatic effect. In several positions in the building one can look through a succession of arches—across the pool, the court, through other vaults or portals, or through a receding series that terminates in the arched mihrab, the sacred symbol that indicates the direction of Mecca.

These arches have a beautiful contour, varying at different times and places, but always with a certain cleanness and liveliness of line. The sweep of the arch flattens out towards the peak and the peak is pushed up just a trifle, not far enough to noticeably break the line, but just far enough to give an extra emphasis to the apex of the arch, which energises all the lines and increases the dramatic effect.

These arches maintained their purity well into the eighteenth century, and in the Madressa Mader-i-Shah one still sees arches of perfect simplicity and elegance. These arches, as in the Masjid-i-Shah and elsewhere, are also arranged in delightful vistas, the arches repeating each other, like an echoing refrain.

Any discussion of the pointed arch in Persia inevitably brings up the question of its origin. From whence did it come, where develop and how transmitted to Europe? Viollet Le Duc, more than 50 years ago, pointed out the Eastern origin of the pointed arch and his thesis has been amply demonstrated many times; but it is only recently that we have been able to trace the process farther back and even now we cannot be too sure. But the pointed arch appears in India before it does anywhere else, where it is incorporated in the façades of temples that are carved in the solid rock, hence the arch is not operating structurally; but from such a depiction of the arch to its structural use was not a far step. This arch defined a niche which contained the image of Buddha. In shape it followed the pointed leaf of the Bodhi or Pipal tree under which Buddha received his enlightenment. It spread rapidly from India along all the lines that the Buddhist missionaries took. Buddhism was strong in Central Asia from the fifth century on, and it is noteworthy that the very Gothic-looking arch of the Nilometer on the Isle of Rhoda, which is dated 861, was built by an architect who came from Feragahana. Buddhism had adherents and advocates in Persia as early as the seventh century, and the obvious advantages of the pointed arch, both aesthetically and structurally, must have appealed to the lively-minded Persians, who were ready to accept hints from all quarters and to adopt and to develop them for their own use and in their own way. Unfortunately, we cannot point to any existing pointed arch in Persia prior to those of Nayin in the tenth century, but the oldest buildings in Persia since Sasanian times all have the pointed arch and the elliptical arch of the Sasanians was certainly looking forward to the pointed arch as its proper fulfilment. The complete thoroughness with which the pointed arch was accepted and universally applied in Persia is in evidence that it met a real need. In no country in the world has the pointed arch been so unreservedly and so permanently adopted. This in itself might

be considered in some degree confirmatory of other evidence that the pointed arch was first developed in Persia. The motives that have led to such universal adoption must also have operated in the initiation of it.

The route by which the pointed arch was introduced into Western Asia and Europe cannot be traced in all

ture." It is at this time that the pointed arch suddenly appears, immediately displacing all other types. It appears first, as Capt. Creswell has noticed, in the Baghdad Gate of Samarra, which may be dated 722. In the great Palace of Samarra, the pointed arch was a unit of construction, and it was the architects from Samarra who went westward and carried the style with them. There is a cistern at Ramleh in Philistia to which Capt. Creswell has called my attention, which is built on pointed arches. The year 861 saw the plan of the Nilometer on the Island of Rhoda, set upon beautifully developed pointed arches, with an inscription built into the stone, giving the date. These arches are astonishingly like those we find in the thirteenth century in England and France. The contours of the mouldings are quite similar—a debased Corinthian capital, little columns and almost the same curvature. Some have thought that these arches must have been rebuilt by the Crusaders, but Capt. Creswell, who has examined them in the greatest detail, tells us that they are quite original.

By 869 the mosque of Ibn Tulun was complete, being the oldest structure of any size that is completely built of pointed arches. Here is a conspicuous building that must have been seen by many of the frequent travellers from Europe to Egypt from the ninth to the eleventh century. Its beauty and its reasonableness, its obvious economy and stability, must have impressed everyone who had an elementary interest in the building art.

Once established in Western Asia, it was easy for the pointed arch to reach Europe. There is already in the tenth and eleventh centuries a lively contact between Europe and the Near East. Pilgrims and travellers were organised into veritable "Cook's Tours," which were controlled by inspection service and passports. An extremely interesting account of these relationships between Europe and the Orient before the Crusades has been given by Jean Ebersolt. Admiral Don Giorgio of Antioch plied between Palermo and Antioch (hence his name) and an eleventh century bridge which is built on pointed arches and which bears his name still stands near Palermo. From this source it was easy for the pointed arch to be distributed to Europe. Abbot Sugier, who as much as any individual may be credited with the transition to pure pointed architecture, confesses in a memorable sentence his eager interest in the Orient and his readiness to learn from the builders there.

It is quite possible that the East not only gave to Europe the idea of the pointed arch, but possibly also valuable structural information, which enabled the European builders to carry it to such a glorious development. The early Middle Ages were eager for grand and imposing effects, but their knowledge of the mechanics of structure was not quite equal to

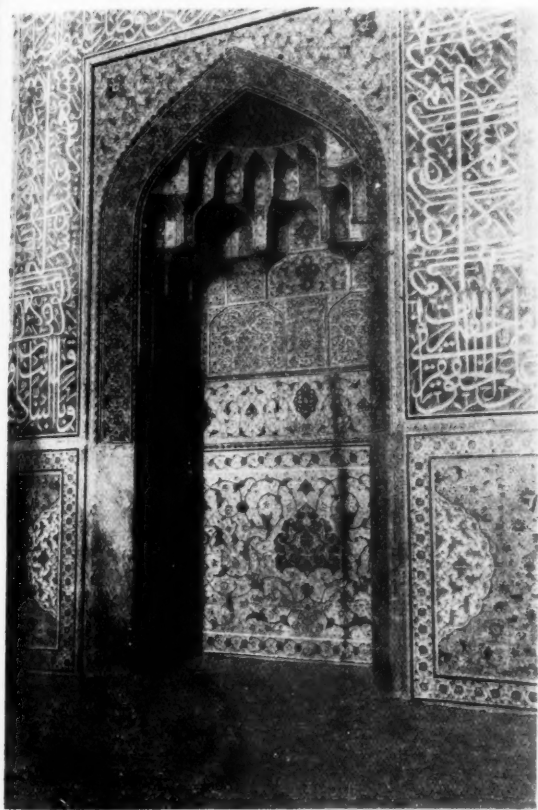
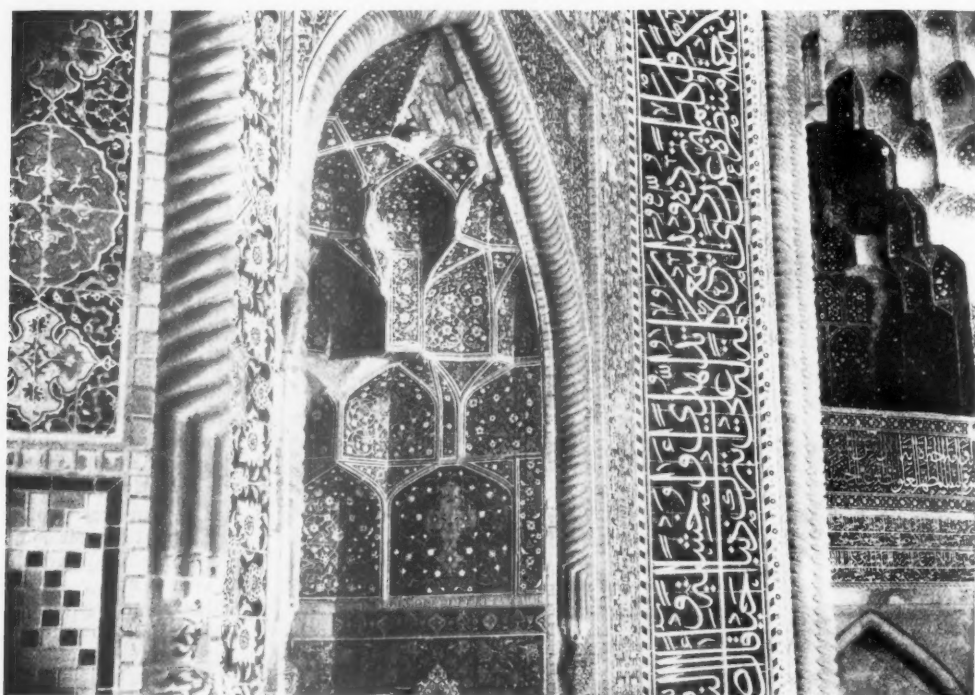


FIG. 11. MASJID SHEIKH LUTF ULLAH, ISFAHAN

its details, but may be mapped out with a fair degree of confidence. It was apparently introduced into Mesopotamia and Syria in the eighth century. The Abbasid Caliphate, as marking the second great epoch in the history of Islam, was, thanks to Persian influence, established in Baghdad as its capital, and from the beginning it was under Persian domination. The Court was thronged with Persian physicians, jurists, generals, artists and architects. As Ibn Khaldun said: "The Arabs took the Persian nation into their service and the Persians taught them art and architec-



MOSAIC FAIENCE: PORTAL OF THE MASJID-I-SHAH, ISFAHAN

Photograph by Dr. A. U. Pope

their ambitions. They had no mathematicians to make the difficult calculations necessary, and experiment in stone must, of course, have been slow and expensive. Might it not be possible that the habit of building in brick greatly facilitated the acquisition of the necessary structural information, which could afterwards be employed in the West? In one of the sanctuaries of the Masjid-i-Jami of Isfahan, there is a pointed vault which is, I fear, doomed to fall. One can see there, with dramatic clearness, the destructive forces actually at work. The piers were not heavily enough weighted, there were no buttresses, and the side walls of the adjoining structure were not carried up high enough to take the lateral thrust of the vault itself. In the photograph we can see clearly the pressure of the vault pushing the piers aside and opening up great fissures. Would stone construction have so clearly revealed these facts. Brick is more plastic in the compression of the bond, in bulging or battling on critical points, adjusting quickly the strains of structural inadequacies. Building in brick would seem to be a sort of experi-

mental architecture, from which one could learn more quickly than from masonry. But this is, of course, a question which architects themselves must answer.

The Persians have early proven their competence to construct great vaults, and the great vault of the Tag-I-Kesra remains one of the masterpieces of the builder's art. Of the early pointed vaults we have several examples from the tenth century, but none on a very large scale. The vault adjoining the great Dome Chamber of the Masjid-i-Jami must be about 30 feet high, and is of powerful and massive construction. It must have been built before 1090, and, according to local tradition, before 1080. The smaller Dome Chamber is dated 1088 and is rather more complex and elaborate in its surface forms than the great Dome Chamber. From this time on the vaults became more and more important and more varied in form and structure, but the structural forces are revealed with a frankness and immediacy that is very gratifying.

The great vault of the Royal Bazaar at Isfahan may serve as an example of later vaults. This is quite

cathedral-like in appearance, even to the aerie tracery that recalls the fan tracery of European churches. These ribs probably add nothing to the security of the structure, but they look as if they did; they increase the sense of energy, they give an element of excitement that matches well with the simplicity and solidity of the vault itself. After all, architecture is an art and not merely a servant of mechanics. The architect has as much right as the painter or novelist to create a world of his own, although he is under special obligation that his creations shall be rational, well-considered and so create the maximum impression of integrity and soundness. But Geoffrey Scott, in that admirable volume, *The Architecture of Humanism*, has well shown that engineering and architecture are not to be identified and that the expression of grandeur, of force, of energy, of weight and security may be achieved by other means than elementary mechanical excellence. Architecture is an art that appeals to the mind and the emotions, and can never be accurately appraised by the measuring rod.

If the Persians wrought marvels with the pointed arch and vault, they did equally well with the dome. The dome presents one of the most fundamental problems of architecture, and the correct solution of this problem is one of the great triumphs in the fulfilment of the art. The Romans, great engineers though they were, never fully understood the problem involved. Their domes, for the most part thick, heavy, solid bells of concrete, with the exception of the dome of the Pantheon, were supported on circular walls or colonnades; but the great problem, from both the practical and aesthetic point of view, is to set a dome over a square chamber, so that the unit of space may be multiplied to cover a considerable area if necessary. The placing of a dome over a square, however, is far from simple, and of the two satisfactory solutions, the pendentive and the squinch, the latter (in some respects more interesting and beautiful of the two) was probably a Persian invention. By this device the dome and square are merged by a series of concave arches supporting a line across the corners, thus reducing it to an octagon. The process can be repeated by slightly concave panels, reducing the octagon to a sixteen-sided figure, which is so near the dome chamber that a little corbelling makes a perfect transition. This device of the squinch seems to have been known to Persia in very ancient times, for there is some documentary and archæological evidence that leads us to think they may have had a dome structure on a grand scale before even the beginning of our era.

In all the history of architecture there is hardly a more splendid solution of this problem than the squinches in the great and lesser dome chambers of the Masjid-i-Jami, which were built toward the end

of the eleventh century, the Isfahan (probably 1080 and 1088). The illustration shows with what superb logic and what sound mechanics this particular problem was solved in Isfahan. In the small dome chamber the motive of the squinch, with its pointed arch recesses, is made the theme of the entire structure, and the squinch is not a conspicuous and obvious mechanical device that emphasises the corners, but the whole structure is a glorification of the same theme. The squinch is enclosed in arched panels that reach to the ground. It is repeated in blind panels, surrounding the drum of the dome, and on the side walls as well. Not even Hagia Sofia presents a more consistent or rigorous logic or one so abundantly satisfying.

A similar consistent and beautiful use of a single motive is shown in the great mausoleum of Sultan Uljitu, at Sultanieh. Here are the same pointed outlines of the arches, the dome, the vaults, and all the subsidiary elements, all being related with unflinching logic and together defining a perfect whole.

The contours of the domes themselves vary widely. There are the flat domes, such as in the exquisite little mosque of Sheik Lutf Ullah on the Meidare in Isfahan (1619). There is the high, proud dome of Uljitu, of the fourteenth century. There are the tall standing standing gold domes of the eighteenth century. But for a combination of genuine grandeur with perfect grace, nothing either in Persia or anywhere else can surpass the dome of the Masjid-i-Jami. It stands on a drum high enough to clear the surrounding structure. The bulge, which is temperate and undemonstrative, is only to give richness to the form; the contour itself altogether lovely. With all its lightness, which seems to defy gravitation, it lacks nothing of seriousness. It sets with a note of triumph.

Persian architecture is best studied first in terms of pure form, and the more we study it from this point of view the more we must respect and admire it. But Persians are nothing if not decorators, and every plain surface is to them a challenge and an opportunity. Thus, although they respect the integrity of their buildings and rarely let ornament damage or confuse the essential character of the structure, none the less they devote genius, effort and great resources toward the legitimate and dramatic enrichment of these forms. The surfaces are divided frequently into well-defined panels. The half-domed vaults are enriched with clustered masses of stalactites, a highly characteristic Persian device which spread throughout the Islamic world. These stalactites, which one sees in the later buildings, are really nothing but little squinches that were first used to fill in the corners, to assist the transition from the rectangular space to the semi-domical form of the great portals. As they were built up in series they became deepened and enriched, their partitions were thrust forward until we get tiers

of these complex cells, one above another, but all following the general contour of the arch and semi-dome and never seeming to be really a weight or encumbrance, but rather like some airy supplementary structure that lightens the load as well as beautifies it. By the eighteenth century, stalactites were still further developed, perhaps farther than can be always justified. They were applied to many subsidiary forms, such as the capitals of small columns or for the filling of angles and recesses.

One of the most delightful and original forms of surface ornament we find in Persian architecture is stucco decoration. Stucco is only plaster—in fact, hardly more than white mud, very common in Persia during the rains; but it is quite characteristic of the Persians that they do not despise the humble gifts of Providence but turn them to good use and often reveal unsuspected possibilities in the most unpromising materials. In their stucco ornament, as in their pottery, they have imbued a common medium with poetry and splendour. In the mosque of Nayin the soffits of the arches are covered with an ornament as rich and vital as anything in the same medium to be found anywhere in the world. Compared to the stucco of Nayin, the ornamentation of the Alhambra is inert and perfunctory. The rich surface that we find at Nayin, which has an obvious kinship with textile ornament, indicates only one of the possibilities in stucco ornamentation. In the little mausoleum of Pir-i-Bakran, up in the mountains west of Isfahan, the same stucco is, at a later period, given quite a different character. Here we have a system of wide curves and scrolls, done with a surprising force and verve that sweeps one irresistibly into its own ample movement. Wide and free as these patterns are, they fit comfortably and naturally within the rather small compass of the panel and give us no sense of any artificial compression. These swinging lines seem voluntarily self-contained and, with all their unexpectedness, wholly natural.

The delightful surface decoration does not mean any loss of tri-dimensionality. Persian architecture has been sometimes spoken of as a paper architecture, a sort of gaily painted pasteboard affair. This is far from true. Nearly all the mosques and caravanserais give an immediate impression of weight and solidity. Although in the ultimate analysis they are only made of brick, the thickness of their walls, the simplicity of their structural elements, the large and sustained scale on which they are planned gives the impression that they are as durable as the eternal hills.

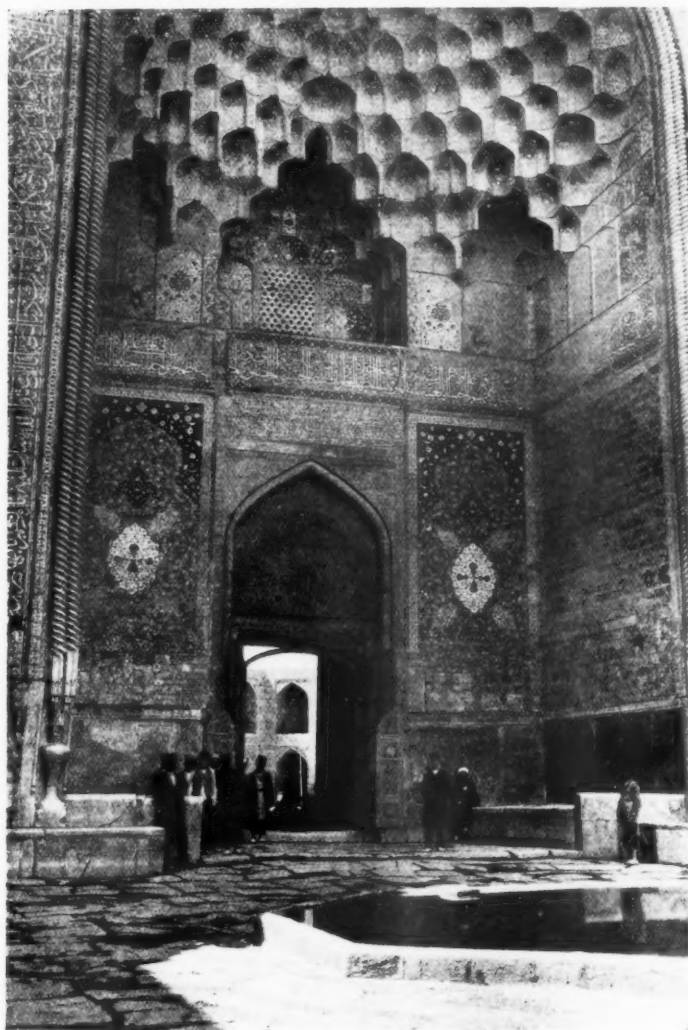
But it is the glory of Persian architects that they

succeeded in clothing their buildings with the most resplendent raiment of colour, employed with that perfect taste and integrity which mark their work in all the other arts. As in their use of other decorative enrichments, here also they resisted all temptations to let this dazzling investiture damage or compromise the basal forms. The glorious colour that gleams from the great mosques seems to shine from the building itself and not to be something attached. The colours, moreover, are distributed with that superb mastery of pattern of which the Islamic world, and Persia in particular, is the unchallenged master.

This colour, which is practically without exception in faience, is made in two ways: the famous so-called mosaic faience, in which monochrome tiles of maximum brilliance are cut up into small multiform fragments, which are then adroitly assembled picture-puzzle-wise to make the vary-coloured patterns. They may be intricate little panels of bewildering intensity, or they may be great façades or domes covered with an appropriately large scale ornament. The general effect is somewhat the same for nearly all, but with different proportions and tonalities for each epoch or region; nearly always mosaic faience gives a dominant impression of blue of such intensity that the sky itself is outshone; azure and cobalt, lapis, emerald and velvety black, golden yellow, amber and milk white together compose a shining magnificence unparalleled in the history of polychrome decoration.

In later times, for the sake of economy and speed, a painted tile was used which, while not so brilliantly illustrious, gave a greater scope to the pattern maker, who could use figures and flowers to an extent not possible in the more brittle technique of the mosaic. But no such advantage could ever compensate for the greater intensity of colour and smoothness of expanse, because a mosaic could be worked into an unbroken area of any dimension, and especially nothing could compensate for the genius of the earlier designers, whose intricate patterns, swirling in subtle, well-ordered rhythms, attained an occasional pitch of intensity that was an appropriate accompaniment to religious ecstasy, just as the major forms, the serene domes, the momentous arches, vaults vast and dim, all glowing with a celestial radiance, convey also a sense of sheltered tranquility, the peace that floweth like a river, a quiet harmony that proclaims the reality of eternal blessedness, the promise and portent of a divine perfection.

This is the triumph of architecture, that it can enshrine in enduring and adequate form man's deepest experiences and highest aspirations.



ENTRANCE TO THE MASJID-I-SHAH, ISFAHAN

Photograph by Dr. A. U. Pope

Vote of Thanks

The PRESIDENT: I think you will agree with me, ladies and gentlemen, that we have listened to a very remarkable address from Dr. Pope, an address which we may consider, I think, one of the most unusual and one of the finest that we have heard in this room for some time. Dr. Upham Pope has given us original information, which he has obtained on the spot; and he has illustrated his remarks by some of the most beautiful photographs

that, I think, I have ever seen, and he has done this in a very interesting way. He evidently has the architectural outlook, and he has shown us some of these views of arches and treatments of arches, and domes, and so on, which are of the greatest interest to us as architects.

I shall not enter into any discussion myself, because I see in front of me some eminent colleagues of mine who, no doubt, would wish to speak, and I believe Dr.

Upham Pope will be only too glad to answer any questions they may put to him.

But, before sitting down, I do want to propose a very hearty vote of thanks to Dr. Upham Pope for his excellent and stimulating address, and I ask you to carry this with acclamation.

The vote of thanks was carried with acclamation.

Mr. H. M. FLETCHER [F.]: If none of us asks questions it is because we really feel we do not want to. It is impossible to put your mind on to history, on the origin of vaults and whether they were invented here or invented there; those things do not matter, and you cannot consider them when you are looking at such a show as this. It is simply a feast of beauty which Dr. Pope has put before us. Everything he has shown us to-night has been full of beauty of one sort or another, of magnificent structural beauty and logic, and he made it easy for us to imagine, even in photographs, the astounding beauty of colour in addition. Those of us who have been to the Persian Exhibition can feel, in some way, the colouring behind those photographs. But, even without that, by the knowledge we have of carpets we can cover those spaces with something of their original colouring. But as to historical questions, most of us are not properly equipped to ask them; and, for another reason, if there are many who feel as I do, they really do not want to ask them, but simply wish to thank Dr. Pope for the wonderful show which he has given us, and for the way in which he has taken us into the very heart of Persia.

Mr. MARTIN S. BRIGGS [F.]: I do not want to ask any questions, but I should like to say something about Dr. Pope, because he—unlike some Americans—does not talk about himself.

I have had the privilege of being associated with him, in a small way, over the arrangements for the Exhibition and, as you will have gathered already, he is not only a very learned person, but also an enthusiast and a very hard worker. I think I should not be exaggerating if I were to say that this exhibition could never have taken place without those qualities of his; his driving power, his imagination, and his readiness to surmount all sorts

of difficulties, have really made it possible. He has enormous powers of work, and in the few days preceding the Exhibition he was, I believe, working all night too. He has told you nothing about the taking of the photographs, but he has told me that he had great difficulty in getting some of the magnificent photographs he has shown us. He was a very privileged person, and was able to go where many would not be able to go. But I gather that on many occasions he was so much afraid of being lynched by the mullahs in the mosques that he thought he would be unsuccessful, yet he got away with a snapshot. And these snapshots were extraordinarily good. Though they were taken half-plate size or less, the detail is wonderfully clear.

Mr. Fletcher has mentioned the question of colour. We have been able to imagine some of the colouring from the slides, and colour is the one thing missing from the slides which we should have liked to see. At the Exhibition, the model which has been made of that great portal at Isfahan (only 30 feet in height, whereas the original is 90 feet), is a wonderful triumph of improvisation. The person who was responsible for its execution, Mr. Arnold Silcock, is here to-night, and I congratulate him, as a fellow-member of this Institute, on that wonderful work. Sixteen-stone visitors who cheerfully sit down on the imitation stone basin in front of the porch, do not know that it is only half an inch thick on the top, and less than a quarter of an inch at the sides. That will give you an idea of the skill of the imitation. People probably think that it is stone which has been brought over from Isfahan by aeroplane for the occasion. It is, as I say, a wonderful improvisation, and, as far as a reproduction can do justice to these indescribable colours, it has done very great justice to it. Those who have been to the Exhibition will know that colour is there. In the last half-hour, when the galleries are clear—that is the time to see Persian colour at its best.

I congratulate Dr. Pope on the splendid lecture he has given us. He has been a brave man to plunge into such topics as the origin of the pointed arch, but he has put up a very good case for the cousinship of Persian mediæval architecture with our own Gothic.



SCULPTURED CAPITAL,
SIR ROBERT LORIMER

SCOTTISH NATIONAL
WAR MEMORIAL

Reviews

THE PLAN REQUIREMENTS OF MODERN BUILDINGS.
By Verner O. Rees [A.]. 40. Lond. 1931. [Benn.]
£1 15s.

Reviewed by HOWARD ROBERTSON [F.].

There is certainly no English book, and—as far as is known—no foreign one, which sets out to accomplish the aims of Mr. Verner O. Rees in this recent publication of Ernest Benn, Ltd.

These aims are succinctly outlined on the jacket, where it is stated that the object of the book is to deal with the requirements of various types of buildings rather than with the principles of planning in general, that "the book contains 51 plates of plans of different types of buildings," and that "the Author has succeeded in co-ordinating and assembling his huge subject so simply that any information can instantly be found."

The publishers' claims in this latter respect are well founded. Mr. Rees is an admirable planner of buildings, as well as a skilled educationalist; logic and clarity govern his executed conceptions, and his written work equally reveals these qualities. Its arrangement is well ordered. The language of the author is precise, restrained, free from verbiage. His style is, in fact, admirably suited to the subject, and his introduction to the theory of planning, preparatory to explanatory notes in twenty-five different categories of building, conveys in a few pages precious information on the theory of composition which has rarely been expressed so ably and succinctly.

Mr. Rees is too expert an exponent of planning not to be himself aware of the difficulties of compressing into so comparatively limited a space such abundance of matter as would place his book, for some years to come, in the category of standard works of reference. It is a pity, therefore, that he did not ambition a bigger volume. Obviously, too, a book of this kind must be up-to-date on the day of publication; and there are evidences, from the omissions in Mr. Rees's book, that in this case the subject matter was completed prior to the erection of certain important buildings whose inclusion would to-day seem almost indispensable. A further criticism, which, of course, results from considerations of space, is that in certain of the categories, notably churches, factories, office buildings, hotels, and flats, the plans illustrated are insufficiently representative. There are, for example, no cathedral plans, no English flats, no large factory groups of the type in which several English firms excel; and the office-building section would also bear supplementing on the English side. Also, the domestic plan contribution of men like Le Corbusier and Lloyd Wright would have made clear the present fluid state of plan theory in this field.

To mention these lacunæ is tantamount to expressing the hope that Mr. Rees will see his way to preparing the publication of an enlarged edition; for his framework and method are admirable, and a book of this type is urgently required in both school and office.

Notable in the letterpress are the sections dealing with the categories of plan composition, with manipulation of axes, and with the geometry of plan. In the delineation of his plan examples there is little to criticise, save an occasional over-emphasis of mosaic to the detriment of plan "reading."

From the plans illustrated emerges an impression of French suavity and good form, of the American will to to achieve effects on a par with those of the French academic tradition, and of efficient though sometimes dull results which accrue from this effort; and lastly, of the elusive spirit of Swedish planning, which can only perhaps be absorbed through a study of the actual buildings on their sites.

SCHOOL DESIGN.

ÉCOLES. By Roger Poulain, ed. *Portfo. sm. fo. Paris* [1930]. [Vincent Fréal.]. £1 1s. 6d.

Reviewed by H. C. HUGHES [F.].

This collection of plates in a portfolio starts with instructions in School Building for the city of Paris. The schools illustrated are all recent or hypothetical and come from France, Germany and Holland. The most surprising is a *projet* in reinforced concrete, overhanging tier upon tier, for a group *scholaire* at Boulogne-sur-Seine, whose object has been to create an airy school on a very small piece of ground.

The German schools illustrated are all actually built and are shown with plain plans and attractive photographs. One very charming little building is a "School in a Forest," by Paul Wolf of Dresden. The plan is ingenious in the separation, yet proximity of, night and day quarters; the inner court serves as a main corridor. It is noticeable that the common English plan of an open court with an assembly hall in the middle is not found in any of these plans. Many halls are used for meetings and gymnastics alternatively. The walls of the classrooms are often lined with blackboards quite low down so that the children can draw upon them.

There is one very big School at the Hague, by Limburg, dramatically built on the banks of a wide canal. An interesting zigzag plan is a girls' school at Châlons-sur-Marne, by Emile Maigrot.

CONCRETE.

CONCRETE YEAR BOOK, 1931. Ed. by Oscar Faber and H. L. Childe. 80. Lond. [1930]. Pp. 332. [Concrete Publications, Ltd.] 3s. 6d.

Reviewed by G. N. KENT [L.].

In this book of general information for all engaged in concrete work, there are nearly 400 pages of directory giving the addresses and products of firms in the concrete industry, and there are the usual tables for designing floors, beams, columns, etc.

A chapter on "Joints in concrete work" is given. Notes on the causes of expansion precede details of the

methods recommended to prevent the effect of expansion from doing harm to the work, and some attention is devoted to the expansion joints of water tanks.

There is an excellent chapter of twenty pages on cement roads considered under the headings Design, Materials, Construction, Maintenance and Cost. Diagrams of cambered hand tampers and smoothing boards are given. In the Cost section there are detailed estimates of two types of carriage way. The chapter concludes with the details of actual cost of a piece of executed work, and then analysing the cost of labour and of materials per square yard respectively, a summary is given showing how the cost of the road per square yard is made up.

A very short chapter contains particulars of "Surface Treatment" and another of "Cast Stone," giving the usual list of suitable colours to mix with the surface layers.

Some of the chapters are interesting only to engineers, but there is much useful information for those who use concrete.

DESIGN AND CONSTRUCTION OF FORMWORK FOR CONCRETE STRUCTURES. By A. E. Wynn. 2nd Revised Edition. 80. Lond. [1930]. Pp. 294. [Concrete Publications, Ltd.] £1.

Reviewed by G. N. KENT [L.].

A very good book on an important subject, sound in theory and sound too, in practice.

The author, a graduate of Birmingham University, is a member of the American Society of Civil Engineers. He is working in New York, and the work is based almost entirely on his own practice.

The chapters on "Theoretical Design" are clear and well written. Beginning always with familiar formulæ for Bending Moment, Shear, and Deflection, the transpositions can be very easily followed by anyone with moderate mathematical ability. Eleven very useful design tables are given, calculated from the formulæ in the text. Twenty-one pages are devoted to worked examples of problems in design. The book is very well illustrated with fine photographs and very clear drawings, a large number in isometric projection.

One chapter is on "Patent Devices," such as cramps, ties, adjustable shores, and so on, for saving time and labour.

There is a good but short chapter on "Planning the Work." This deals with the materials required, and sequence of operations on the job, and examples are given of detail sheets. Each sheet bears a dimensioned sketch of the unit, giving sizes of parts, and then a complete, but concentrated, specification of the operations to be done on it.

The text is full of very sound practical notes by one who evidently really understands his subject. The minute but important detail of these notes is amazing. Here and there in the book the method of estimating cost is shown, giving constants of labour.

The only American flavour is observed when the author describes nails as 10d., 20d., and so on.

Apart from its special purpose as a treatise on "Form-work," it would be excellent for designing heavy timber structures, and for carpenters' work generally.

Yes! a very good book indeed.

ACCESSIONS TO THE LIBRARY. 19 JANUARY—21 FEBRUARY 1931.

INCORPORATING

NOTES ON RECENT PURCHASES.

(These Notes are published without prejudice to a further and more detailed criticism.)

Lists of all books, pamphlets, drawings and photographs presented to, or purchased by, the Library will be published periodically. It is suggested that members who wish to be in close touch with the development of the Library should make a point of retaining these lists for reference.

Books presented by Publisher marked

R.

Books purchased marked

P.

Books of which one copy at least is in the Loan Library marked with an asterisk.*

ARCHITECTURE.

PLANNING.

PLAN REQUIREMENTS OF MODERN BUILDINGS. By V. O. Rees. 40. Lond., 1931. [Ernest Benn.] £1 15s. R.

BUILDING TYPES.

ECOLIS. By R. Poulain, ed. Portfo. sm. fo. Paris [1930.] [Vincent Fréal.] £1 11s. 6d. P.

A NEW AND COMPLETE SYSTEM OF ARCHITECTURE DELINEATED, in . . . designs for . . . houses. . . with . . . an estimate of each . . . By William Halfpenny. Ob. sm. 40. Lond., 1749. [John Brindley.]

This edition is cited in the South Kensington "Universal Catalogue," and located in the Soane Museum. The Institute has already an edition, paper-bound and slightly larger, entitled "A Complete System of Architecture," etc., which is undated but evidently later, judging from the spelling and typography. There are 46 plates in each, which appear to be respectively identical, plus a view of a sunk pier of Westminster Bridge. The engraver signs himself Parr. H.V.M.R.

*ENGLISH WINDMILLS. By M. I. Batten. (Society for the Protection of Ancient Buildings.) Vol. i. Sm. 80. Lond., 1930. [Architectural Press.] 5s. 6d. R. and P.

ACOUSTICS.

*ACOUSTICS OF BUILDINGS, including Acoustics of Auditoriums and Soundproofing of Rooms. By F. R. Watson. 2nd ed. La. 80. New York, 1930. [John Wiley and Sons; Chapman and Hall.] 15s. P.(3)

ALLIED ARTS AND CRAFTS.

PERSIAN ART since the Seventh Century A.D., Introduction to. By A. Upham Pope. La. 80. Lond., 1930. [Peter Davies.] 10s. 6d. P.

ARCHITECTURAL TURNED WOODWORK of the Sixteenth, Seventeenth and Eighteenth Centuries. By T. Small and C. Woodbridge. Portfo. 40. Lond. [1931.] [Architectural Press.] 8s. 6d. P.

MODERN ENGLISH FURNITURE. By J. C. Rogers. 40. Lond., 1930. [Country Life.] £1 1s. R. and P.

ENGLISH WROUGHT IRONWORK of the late Seventeenth and early Eighteenth Centuries. By T. Small and C. Woodbridge. Portfo. 40. Lond. [1931.] [Architectural Press.] 8s. 6d. P.

BUILDING. MATERIALS.

MOISTURE MOVEMENT THROUGH WOOD. Scientific and Industrial Research (Dept. of), Forest Products Research: Technical papers. No. 1: with reference to Timber Seasoning. No. 2: The Steady State. Pams. sm. 40. Lond., 1926. [Stationery Office.] 1s. 6d., 1s. 3d. P.

BRITISH ENGINEERING STANDARDS ASSOCIATION. Draft specification for cast iron soil, waste, ventilating, and heavy rainwater pipes. Pam. 80. Lond., 1931.

Presented by the Association.

FORMWORK FOR CONCRETE STRUCTURES. Design and construction of. By A. E. Wynn. 2nd revised ed. 80. Lond. [1931.] [Concrete Publications, Ltd.] £1. P.

CONCRETE YEAR BOOK, 1931. Ed. by Oscar Faber and H. J. Childe. 80. Lond. [1930.] [Concrete Publications, Ltd.] 3s. 6d. R.

MECHANICS.

*THE MECHANICS OF BUILDING. By A. D. Turner. Sm. 80. Lond., 1930. [Sir Isaac Pitman.] 5s.

This inexpensive little book deals, in simple language and without recourse to complicated mathematical calculations, with the subject of the mechanics of building construction.

The architect and architectural student are required at the present day, more than ever, to have a thorough working knowledge of the theory of structures so far as it affects the simpler structures. The aim of the book is to cover most of the problems which an architect might be expected to deal with personally without the aid of an engineer.

Numerous examples are worked out step by step and can be followed and understood by anyone having a knowledge of elementary mathematics.

This book should prove helpful to students preparing for examinations, and particularly to those who have to study without the help of a teacher. D.C.

SANITARY SCIENCE.

DRAINAGE BYELAWS, made . . . 1929. BYELAWS made . . . 1930 . . . with respect to WATER-CLOSETS, [etc.] London County Council. Both sm. fo. Lond., 1930. [P.S. King and Son.] 6d. and 4d. *Presented by the L.C.C.*

The form in which these By-laws are drawn seems to me to be a great improvement on the form adopted in the By-laws which are repealed.

The new By-laws set out very clearly, in a series of sub-headed and numbered paragraphs, the whole of the regulations applicable to the various structures and pieces of apparatus which go to make up a sanitary system. The reader feels, after going through one of the sub-headed paragraphs, that he is really completely informed of all the Council's requirements on that particular matter. It is to be hoped that other legislative matter intended to be used by technical people without the assistance of lawyers will be drawn in a similar way. G. N. K.

*LIGHTING, NATURAL AND ARTIFICIAL; ANCIENT LIGHTS. By P. J. Waldram [L.]. [Five pamphlets bound together.] Pam. sm. 40. 1923-28. *Presented by the Author* (2).

LIGHTING FOR CLERICAL WORK: Effect of Distribution and Colour on. Scientific and Industrial Research (Dept. of); Illumination Research: Technical papers. No. 10. Pam. la. 80. Lond., 1930. [Stationery Office.] 6d. P.

*LIGHTING [FOR] FINE WORK: Effect of Different systems . . . on output and accuracy (typesetting by hand). (Joint report of the Industrial Fatigue Research Board and the Illumination Research Committee.) Pam. la. 80. Lond., 1928. [Stationery Office.] 4d. P.

ELECTRIC LIGHTING IN DOMESTIC ARCHITECTURE. By N. A. G. Neil. (Thesis for Final Examination, 1930.) Typescript [1930.] *Presented by the Author.*

*ELECTRICITY FOR ARCHITECTS. By C. H. Waghorn. Sm. 80. Lond., 1930. [Blackie.] 6s. P(3).

ENGINEERING.

ART OF THE BRIDGE BUILDER. By G. H. Jack [F.]. Pam. 80. n.p. [1928.] *Presented by the Author.*

GAUGES AT A GLANCE. By Thomas Taylor. 6th ed. Ob. 12mo. Liverpool, etc., 1925. [Spon.] P. (Science Committee).

In the last issue of the JOURNAL, a collection of drawings by the late H. E. Wooldridge was stated incorrectly as having been given by Mrs. Bridge. These drawings were given to the Institute by Mrs. Bridges, the wife of the late Poet Laureate. Mr. Wooldridge was formerly Slade Professor at Oxford, and left these drawings on his death to Dr. Bridges.

NOTE ON ONE OF THE ILLUSTRATIONS TO THE REVIEW OF SIR ARTHUR EVANS'S KNOSSOS. VOL. III.

In the JOURNAL of 24 January a photograph was reproduced from Sir Arthur Evans's latest volume on Knossos of an engraved onyx jewel showing a bull drinking at a fountain. Mr. Fyfe, who reviewed the book, wishes to draw attention to the fact that the jewel itself is only one-third (linear) the size of the reproduction, since the beauty and extreme delicacy of the craftsmanship cannot adequately be appreciated unless this fact is known.

MR. W. GODFREY ALLEN [F.].

The Dean and Chapter of St. Paul's have appointed Mr. W. Godfrey Allen, F.R.I.B.A., to the office of Surveyor to the fabric in succession to Sir Mervyn Macartney, whose resignation will take effect next month.

MR. J. A. MORRIS, R.S.A.

Mr. James A. Morris [F.], of Ayr, was elected an academician of the Royal Scottish Academy on 11 February, to fill the vacancy caused by the death of Mr. J. B. Dunn, of Edinburgh.

VOLUMES OF THE R.I.B.A. JOURNAL.

Many members of the Institute are probably unaware of the arrangement by which they can be provided with bound copies of each volume of THE JOURNAL in exchange for the loose parts. The Institute provides paper bound volumes free of any charge, and for 7s. 6d. a volume bound in strong buckram. We are drawing attention to a service which, from the small extent it is made use of, must, we conclude, be little known. It is obvious that whereas loose issues of any periodicals tend to become untidy and useless, bound copies with an index can be of considerable use and may, of course, be kept tidily on a shelf.

Correspondence

To the Editor, JOURNAL R.I.B.A.,—

DEAR SIR,—I have heard the suggestion made—with some sadness—that, when “The Institute” migrates to new quarters, some of the “friendly homeliness” of Conduit Street may get lost in transit.

Personally I have found the old buildings, particularly the Library, “homely,” but have met few signs of friendliness, except on the part of the officials.

Years ago as a young man I ventured to speak at the meetings—and it was, I felt, a perilous venture in the frigid atmosphere. In a similar situation among Freemasons, Oddfellows, Ancient Buffaloes, the common run of literary societies, the Art Workers’ Guild, even at meetings of a Christian Church, some “Elder Statesman” would “over the tea cups” have “passed the time of day” to an embarrassed neophyte. But in all the years I have attended meetings of the R.I.B.A. Sir

Ernest George was the only man who has ever done anything of the kind, and when I have ventured to speak first the result was—unencouraging! As it was in the beginning, so it is now. The last time I became articulate, when I had just got on the way, a gentleman in a chair exclaimed, “What name” in a minatory tone of voice, suggesting that “Who in the devil are you?” was a more suitable form of words, and then, when I had got on the way once more, all round me were whispering “Where does this fellow think he is?—he can’t be more than 60!”

I craved for a drink of some kind, but failed to get it, as men will munch at the buffet instead of grabbing their grub and passing along.

My name is on the paper, but as this is rather a personal, not to say delicate, matter I will sign myself, say,

ATHANASIUS.

Obituary

RAVENSCROFT ELSEY SMITH [F.].

To many the death of Elsey Smith means the loss of a friend whose unflinching geniality will be sorely missed; a friend who could be relied upon, and one whose help and advice were always given unstintingly and graciously. The son of Professor Roger Smith—a pioneer in the architectural education movement—he inherited a scholarly outlook towards the building arts, and enjoyed facilities such as seldom came to a young man in those Victorian days. At Mill Hill School he gained distinction as Gold Medallist for the English Essay, and after serving his articles in the orthodox manner of the time with the late Edward J. Tarver, and gaining some insight into the practice of architecture in the busy office of Alfred Waterhouse, was taken into partnership by his father. In 1879, at the age of twenty, he gained the Donaldson Medal, and followed up this promising debut in the world of architecture by winning the R.I.B.A. Essay Medal in 1887 and becoming an Associate R.I.B.A. by examination two years later. But the value of his early training and the insight into classical archaeology which his father was able to give him were soon to lead to extensive travels in Italy, Greece, and Cyprus as Greek Travelling Student, with headquarters at the British School at Athens. His memory will be kept bright through contributions to Greek archaeology made in the years immediately following his election to this coveted Travelling Studentship, and his reputation was such that in the year 1900 he was appointed Professor of Architecture at Kings College, London. From about this time, however, the claims of a London practice and growing interest in the scientific and practical aspects of building tended towards his concentration of thought upon the furtherance of current matters rather than upon the solution of problems centring about past civilisations, and henceforth his name came to be associated with structural developments rather than with historical dissertations. In 1905 he became a Fellow R.I.B.A., and for many years was a valued member of the Science Standing Committee. Having added to his other qualifications that of a District Surveyor in 1889, Elsey Smith first entered upon his new duties in this capacity as one of the Surveyors under the London Building Act for the Wandsworth District;

later he was transferred to the Borough of Shoreditch, holding that appointment till the time of his retirement a few years ago. All through these years he was a loyal and enthusiastic Freeman and Liveryman of the Worshipful Carpenters Company, encouraging in many ways, by wise counsel and helpful lectures, the good work that has made Carpenters Hall famous as a meeting place for all interested in the most British of all crafts. His election as Junior Warden in 1929 was followed by that of Senior Warden in 1930, and had he lived, his ambition to follow in his father's footsteps and be Master of the Company he loved so well would most probably have been realised this year. As a lecturer and examiner, and for nine years Chairman of the Board of Examiners of the Carpenter's Company, his place will be difficult to fill, and legion must be the workers in the craft who, as students, had good reason to be grateful for the encouragement and teaching they received at his hands.

During the years of partnership with his father Elsey Smith was engaged upon additions to several public buildings, including an important extension of University College on the Gower Street front; subsequently by himself he was responsible for the Stratford Estate of the Carpenter's Company, Mount Vernon Hospital, Hampstead, and many factories and dwelling houses. With these numerous activities he still found time to pursue his favourite hobbies of colour photography and gardening, which had succeeded that of the Volunteering of earlier days when he reached the rank of Captain in the old Bloomsbury Rifles.

In 1904 he married Ida, daughter of the late Mr. John Harry, and she survives him. It was, perhaps, in the beautiful garden surrounding the house he built at Horsell, near Woking, where he lived and died on 26 December last, that, to those privileged to know him, something more compelling was revealed than the wisdom and learning so apparent to all who came in contact with him in the office or class room. There, one was conscious above all of the courteous English gentleman, very human and very unaffected, who, by his simple straightforwardness won the hearts of all who knew him intimately.

ARTHUR STRATTON [F.].

WILLIAM CAMPBELL [F.].

The death occurred on 31 January at 103 Victoria Road, Shelton, at the age of 70, of Mr. William Campbell, F.R.I.B.A., one of Hanley's best known architects.

He established the firm of William Campbell and Son in Hanley about 35 years ago, and among the industrial buildings in the city for which he was responsible is Northcliffe House.

Almost all his interests outside his business indicated his love for his profession. He was first treasurer of the North Staffordshire Architectural Association, of which he subsequently became a vice-president, and was particularly interested in, and ready to help and advise, the junior members.

He was a member of the North Staffordshire Field Club, being on the Council and Chairman of the Sketching Section. He had a wide knowledge of archaeology and often read papers to the club, while the excursions he led were always extremely interesting.

Mr. Campbell did valuable work as a member of the Picture Exhibitions and Collections Sub-Committee of the Stoke-on-Trent Libraries and Museum Committee, and as a member of the Joint Advisory Committee of Art of the City Education Authority. He was also a member of the Ceramic Art Society, and as one of the oldest members of the Potteries Mechanics' Institute was appointed a trustee in 1922, having formerly held the post of secretary. He was a Freemason, and founded the Hanliensian Lodge.

Mr. Campbell will be greatly missed in the city, where his untiring enthusiasm and kindly personality won him many friends. The practice will be carried on by his son, Mr. Donald C. Campbell, who was engaged in work with his father.

ROBERT THIRLAWAY [L.].

The death occurred suddenly on 16 January of Mr. Robert Thirlaway, of Jesmond Cottage, Winchester Road, Southampton.

Mr. Thirlaway, who was 54 years of age, was a partner of the firm of Burnett and Sons, Chartered Architects and Surveyors, of No. 2 High Street, Southampton.

Born in Newcastle, Mr. Thirlaway was educated at Woolston College, Southampton, served articles with Messrs. Lemon and Blizard, Civil Engineers, and afterwards was, for a short time, assistant to Mr. C. J. Hair, A.R.I.B.A.

In 1898 he became managing assistant to the late Mr. A. A. Burnett, F.S.I., since whose death he has been a partner in the firm with Mr. A. S. Burnett, A.R.I.B.A., and Mr. H. J. White, L.R.I.B.A.

He was a Licentiate of the Royal Institute of British Architects and, as a Fellow of the Surveyor's Institution, was a fully qualified Quantity Surveyor.

Mr. Thirlaway was a member of the Royal Gloucester Lodge of Freemasons.

HUBERT COVELL SANDS [L.].

Hubert Covell Sands [L.], who died on 15 January, was born in Gravesend in 1877. He commenced his professional career at Pilditch's, Pall Mall, where he stayed for some years; then, after two years at Orpington, Kent, where he opened up an estate, he entered the Architectural Department of the County Council, where he worked for nearly 30 years. He was particularly interested in Town Planning, and visited many continental towns in connection with this work.

For many years he did valuable work in giving evening lectures at the Architectural School of the Regent Street Polytechnic. He was greatly respected by the students and staff, and was especially keen on all activities connected with the younger generation.

He joined up in 1915, and was 2½ years in France. He

remained in the 47th (2nd London) Division R.A.M.C. (T.A.) at the Duke of York's Headquarters till last March, when he retired as a Major.

THIRTEENTH HOUSING AND TOWN PLANNING TOUR.

The Garden Cities and Town Planning Association has just issued the programme of their 13th Housing and Town Planning Tour, which will take place from 19 to 30 May, 1931, and will include visits to Berlin, Prague, Vienna and Nuremberg. As they say in the preface to the programme "The 1930 Housing Act and the generally recognised interest in clearing slum areas has brought into prominence the activities of other countries," consequently the progress made in Berlin and Vienna is of added interest and importance at the moment. The cost of the tour is £36 per person, which includes almost every possible expense. Copies of the programme may be obtained from The Secretary of the Association, 3, Gray's Inn Place, W.C.1.

HOUSING AND TOWN PLANNING CONFERENCES.

The National Housing and Town Planning Council has arranged to hold, as in previous years, a series of regional conferences of local authorities in different parts of England and Wales. The centres to be visited this year are London, Manchester, Leeds, Newcastle-upon-Tyne, Birmingham, Bristol, Nottingham, Plymouth, Cambridge, Cardiff and Llandudno.

The agenda for the conferences embraces many important subjects, including the administration of the Housing Acts; the problem of slum clearance; the rural housing problem; and town and regional planning problems. In particular, local authorities will be urged to make a determined attack on insanitary areas and unfit houses.

Full particulars of the conferences are contained in a programme which may be obtained gratis from Mr. John G. Martin, Secretary, National Housing and Town Planning Council, 41, Russell Square, London, W.C.1.

THE NATIONAL ASSOCIATION OF WATER USERS.

Members are reminded that the National Association of Water Users, on which the R.I.B.A. is represented, exists for the purpose of protecting the interests of consumers.

Members who experience difficulties with water companies, etc., in connection with fittings are recommended to seek the advice of the Association. The address of the Association is 46 Cannon Street, London, E.C.4.

CORRECTION.

In the last issue Professor Beresford Pite was reported as attributing to Rossetti the story that Raphael had intrigued to give Michael Angelo the Sistine ceiling to paint. The story comes, of course, as Professor Beresford Pite really remarked, not from anything said by Rossetti, but from Vasari.

THE FORMATION OF AN ADVISORY COUNCIL FOR THE BUILDING INDUSTRY.

The report of the General Purposes Committee of the L.C.C. has been published, in which it says: "Having regard to the importance of the subject and to the public interest evinced therein, we are of opinion that the time has arrived when the London Building Act should be examined by an impartial and authoritative body representative of the various interests concerned and that the Council should refer the whole question to it for investigation." Reference is made in the report, as an indication of the interest being taken in the matter, to the deputation which was received by the Minister of Health in July of last year. This deputation, as members will know, was headed by Sir Banister Fletcher, and in December, as the outcome of this, a preliminary conference was held under Sir Banister's chairmanship at the R.I.B.A. The County Council, as stated in this report, has resolved to appoint a committee of twenty members to consider amendments to the London Building Act, twelve of these to be representatives of the County Council, and the remaining eight from the leading interests affected.

A SMALL HOUSE PRIZE.

COMPETITION ORGANISED BY THE OXFORDSHIRE SOCIETY OF ARCHITECTS.

Any discussion on the preservation of rural England, on jerry building or ribbon development almost invariably ends with the broad conclusion that things are as they are merely because the general public has no reasonable standards of architectural taste, and is unable to choose between the good and the bad. If this is true, and it seems to be fairly generally accepted, any activity which will assist in the education of the public in architectural matters is of more than interest, it is of considerable importance, and the competition which we describe below, that is being organised by the Oxfordshire Society of Architects, is a delightful, and, we hope, will prove to be a potent, means of directing opinion in the right channels. This prize has been given to stimulate the building of good bungalows and small houses within the County of Oxford. The prize for the winning house is awarded to the client, who receives the sum of £20; to the builder if he built to sell; the actual designer is given a certificate and a tablet is fixed to the building. It will be seen from this that all sides of architectural activity—client, builder, architect, and the house itself—are brought within the benefits of the award.

It is a year ago since the Essex, Cambridge and Hertfordshire Society awarded their first medal for the best building put up in its area. The publicity which that award received must have been of service to the profession and the public. We hope that in the same way the Oxfordshire Society will receive all the encouragement and publicity that is their due for this enterprising competition.

In the words of the conditions issued by the Society: "The judges will attach importance to the general

shapeliness of the building, to the simplicity, restraint, and good proportions of its details, and particularly to its harmonious relation to the countryside."

The prize is offered to any person or persons building or causing to be built houses for their own occupation, for sale or to let, but is restricted to such houses having a total floor area not greater than approximately 1,200 superficial feet, measured outside the walls. (This means a bungalow not larger than about 60 ft. by 20 ft., or a two-storied house about 30 ft. by 20 ft., in all cases exclusive of garage or outhouses.)

No house shall be considered by the jury which in their opinion could not have been built for 1/3 per foot cube.

The award will be made by a jury of five persons, three being architects nominated by the Oxfordshire Society, and two being laymen nominated by the Oxford Preservation Trust and the C.P.R.E.

Full particulars of the competition and the nomination form can be obtained from the Hon. Secretary, Oxfordshire Society of Architects, 47, Broad Street, Oxford.

NOTES BY MEMBERS OF THE SCIENCE STANDING COMMITTEE

BUILDING RESEARCH STATION BULLETIN.
No. 9

BONDING NEW CONCRETE TO OLD. By Norman Dacey.

In all special concrete work the bonding of new concrete to old is important, and forms the subject of a B.R.S. Bulletin to itself. It is seldom possible to complete the whole of the concrete at a time. Interruptions must occur, and a certain procedure is recommended. When concreting columns pouring should continue until a point is reached just below the soffits of beams or haunches, and then the concrete should be left to settle for at least two hours before the slabs and beams resting on the columns are proceeded with. Then these slabs and beams should be cast in one operation. Other general rules are given which are important enough to figure in specifications. In the bonding of ordinary Portland cement concrete it is necessary to get a clean contact between new and old work: "where possible it is advisable to fill the forms to a point slightly above the required height, and then strike off the poorer material that collects at the top."

For concrete that has been in position for more than four hours but not longer than three days another bonding method is suggested. The Bulletin also gives a method of grading the cement and sand at the joint which in the laboratory gave complete efficiency. A thoroughly useful Bulletin.

VISIT TO THE BUILDING RESEARCH STATION
BY MEMBERS OF THE SCIENCE STANDING
COMMITTEE.

The second visit of members of the Science Standing Committee to the Building Research Station at Watford took place on 22 January, and at the suggestion of Dr. Stradling they were

directed to the work being done in connection with certain physical properties of Brickwork and Concrete.

Dr. Glanville then took the members in charge and explained generally what had been done as regards the testing of brickwork during the past year: from a general inspection it appears that the crushing strength of stock brickwork built with modern cement is much in excess of the results given in the R.I.B.A. tests of 1896-1897. It is certainly time that these results should be revised, owing to the fact that the Fletton brick has established itself since that date and so much has been done in the improvement of cement.

In connection with the tests on concrete it was interesting to note the care that is taken to average out the inequalities in the cement that was used by mixing samples taken from various barrels, and even although the cement itself is guaranteed to be up to B.E.S.A. specification: this adjusted cement is then kept in airtight containers. A standard aggregate which is dried before use is also built up from sand and gravel that has been graded and then mixed in definite proportions. Further, the ordinary commercial mixing machines have been altered so as to prevent loss of water during use—thus the fortuitous is eliminated as far as possible.

Although it does not often come in the way of an architect's practice, members were interested in experiments that were being made upon the action of sea water upon concrete composed of various types of cement in different proportions of aggregate. From the periodical examination it was found that all the concrete seemed to be standing well so far, with the exception of certain lean mixtures which seemed to be rotting away.

The attention of members was drawn to the experiments which were being made as to the stresses induced in reinforced concrete by shrinkage and by the creep of concrete under load. It is too early to say how the results of these important experiments will affect current reinforced concrete practice, but it seems to be undoubted that stresses are occurring both in the concrete and the steel which at present are being overlooked.

The more that one sees of the work of the Building Research Board the more essential does it seem that those who have the control of the education of the rising generation of architects should keep in constant touch with the new knowledge that is

being acquired: not only so that this new knowledge should percolate to students but—and this is perhaps more important—so that they should receive their education in an atmosphere sympathetic to the scientific aspects of all building work.

Publications:

B.R.S. Technical Papers Nos. 10, 11, 12: Studies in Concrete.

B.R.S. Annual Report, 1926-7-8-9: Sections on Brickwork.

W. E. VERNON CROMPTON [F.]

IVth PAN-AMERICAN CONGRESS OF ARCHITECTS.

We have received the report of the Pan-American Congress of Architects which was held at Rio de Janeiro in July and August 1930.

It is, unfortunately, too lengthy to publish in the JOURNAL, even in précis form, but may be seen by those who wish in the library. The report is embodied in a series of ten theses, each with its "conclusions" representing the final opinions of the members of the congress on the subject debated.

There were, among others, theses on The Teaching of Architecture on the Hygienic, Economic, Social and Aesthetic Aspects of the Skyscraper; Urbanism and Rural Architecture, which has full and careful treatment; Professional Practice and Competitions.

The conclusions, as is almost inevitable with large congresses, are often too vague to be of real service, but they indicate clearly enough the trend of architectural opinion on the American Continent, even if they cannot effectively guide the future. It is perhaps rather fruitless for a congress to come to such a conclusion as this on "How to judge the tendency of Modern Architecture." "The tendencies of modern architecture constitute the initial plastic expression of a new cycle in the adaption of simple forms to the spirit of the age, which should be characterised by the desire to harmonise its creations with the new materials and constructive and technical elements which progress has incorporated in the inheritance of civilisation."

Such a "conclusion" may not certainly represent the value of the actual discussion that helped to form it; but the futility of these generalisations as the product of an important congress only serve to vitiate the possible importance of conclusions on other and more tangible subjects.

Allied Societies

(The attention of Members of the Allied Societies is particularly called to these pages)

BIRMINGHAM ARCHITECTURAL ASSOCIATION.

On 24 January, Mr. A. Trystan Edwards gave an address illustrated by lantern slides to the Birmingham Association on the subject of the Modernist Movement in Architecture. Mr. Edwards said that he disliked skyscrapers, garden suburbs, twentieth century Tudor, and a good deal of what was known as twentieth century classic, but still more did he dislike the eccentric manifestations of the modernist movement. Admittedly all forms of modernism could not be lumped together, for there were degrees of wickedness among the modernists as among the traditionalists. The modernists he complained were absolutely wrong in their theory, which made it almost impossible for them to instil into their work the full intellectual content found in the greatest architectural works of the past. Novelty introduced by the modernists were not additions to, but subtractions from, our concept of design. The striking results in no way represented architectural progress, the modernists were as yet only aware of structural "function" and did not seem aware of the possibilities of aesthetic "function," and unable to recognise it when it existed. The

classic order was never an element of construction, but its function was purely aesthetic. Mr. Trystan Edwards defined the new functionalism as "That unattractive residuum obtained when you deprive a building of its proper components of good manners and good composition."

The Lecture was illustrated by slides of modern buildings.

NORTH STAFFORDSHIRE ARCHITECTURAL ASSOCIATION.

The annual general meeting of the North Staffordshire Architectural Association was held in Stoke-on-Trent on 20 January 1931.

The retiring President, Mr. E. T. Watkin, I.R.I.B.A., in the course of his address mentioned that the principal event during his year of office had been the concluding of the final arrangements for the affiliation of the Association with the Liverpool Architectural Society, which Society has accorded the North Staffs Association a kindly and wholehearted welcome.

Mr. Watkin referred to the annual dinner as having been a great success, due principally to the fact that the President of the R.I.B.A., Sir Banister Fletcher, the Secretary, Mr. Ian

MacAlister, and the President of the Liverpool Society had honoured the Association with their presence. The retiring President then spoke in appreciative terms of the Students' work in connection with the lectures and papers organised by the Association, and encouraged them to continue to diligently interest themselves in the facilities afforded.

To Mr. J. R. Piggott, A.R.I.B.A., Mr. Watkin expressed, on behalf of the Association, deep appreciation and grateful thanks, on his retirement, for his services for the past five years as Hon. Secretary. He then expressed pleasure that Mr. F. V. Hulme had been elected one of the Hon. Secretaries to co-operate with Mr. C. Edwards, already in office.

Special reference was made to the scheme for the formation of panels of architects which Mr. R. T. Longden, F.R.I.B.A., the author, had been requested by the R.I.B.A. to organise in North Staffs, and to render his assistance in the organising of other panels throughout the country to be modelled on the North Staffs Panel, the first formed.

The retiring President concluded by thanking the Council for its help and support during the past year and by wishing the new President a very successful year.

The new President, Mr. J. Brittain Adams, L.R.I.B.A., then addressed the meeting, and after thanking his colleagues for entrusting him with the honour of the Presidency, cordially expressed the thanks of the Council and members to the retiring President for the very genial and successful manner he had steered the Association through the past year. Mr. Adams indicated that one of the primary objects he and the Council had in view for the immediate future was the interest and welfare of the Junior and Student members, and he mentioned that a special effort to engender further enthusiasm for comradeship and study was about to be organised and centred round a new Students' meeting room which Mr. R. T. Longden and his partner, Mr. W. J. Venables, had kindly placed at the disposal of the Junior section free of expense to them.

The new President referred to the honour and satisfaction he and the Association would feel during the ensuing year in their now finally established affiliation with the Liverpool Society, and also in being associated with the bringing to final fruition of "The North Staffs Panel of Architects," the first of its kind in the country, already successfully organised with the full approval and support of the R.I.B.A. by the author, Mr. R. T. Longden, Founder and Past President of the North Staffordshire Architectural Association. The new President announced an admirable and interesting list of forthcoming Public and Students' lectures, also outdoor excursions for the new session.

The meeting then terminated in an atmosphere of general satisfaction with the past year and enthusiastic anticipation of an interesting and successful year in 1931.

WEST YORKSHIRE SOCIETY OF ARCHITECTS.

Mr. Norman Culley, Huddersfield, presided at the bi-annual dinner of the above society held on 5th February, at the Great Northern Hotel, Leeds. Among the guests present were Alderman E. J. Morrish, Deputy Lord Mayor of Leeds, Alderman Thos. Canby, Deputy Mayor of Huddersfield, Mr. Henry M. Fletcher, Vice-President of the R.I.B.A., and Messrs. Sydney D. Kitson, and Mr. Ian MacAlister, Hon. Secretary and Secretary respectively of the R.I.B.A.

In proposing the toast of the R.I.B.A., W.Y.S.A., and other allied societies, Mr. Gerald Veale, F.C.A., remarked that the profession of architecture was harnessed to the service of all other callings. Doctors could bury their mistakes, but architects had to stand responsible for their buildings, whether good or bad. The speaker asked why there should exist such abortions as disfigured our cities, and countryside? The public already owed a great debt to architects, but it only asked that the debt might be increased. Why should they have any slums at

all. Was it vain to hope that, at a time when social services were being ministered to by an orgy of expenditure that had never been known, members of their profession should be given the direction of work now left to the jerry-builder? That course would, at any rate, give control to those who had some little regard for the souls of men.

Mr. Henry M. Fletcher, in responding, expressed regret that the President of the R.I.B.A. was unavoidably absent from their gathering, and went on to say how effectively such functions as the present one drew tighter the bonds which united the Allied Societies and the Institute. Speaking of their work in such industrial districts as that of West Yorkshire, he considered that the old saw, "Smoke means brass," should be amended. Smoke was waste of brass. It meant ill-health and often serious illness; also exaggerated laundry bills. It also meant inefficient fuel, and led to depression and loss of working hours. He congratulated Leeds upon its admirable school of architecture, and Mr. Addison, the head of that school, upon the award to him of the R.I.B.A. Athens bursary.

Mr. Norman Culley, President of the W.Y.S.A., in further response, said that the allied societies required the support and co-operation of the Royal Institute, and paid a tribute to the work being done by Mr. MacAlister in that direction. Each allied society had to extend a protecting influence over the architecture within its area. Every architect erected to himself a monument in the buildings for which he was responsible, and they in West Yorkshire were endeavouring to create in the public mind a knowledge and appreciation of good architecture. It was his pleasure to refer to the generous action of Mr. William Nicholson, of Leeds, who had increased his annual gift of £200 to £240, for the purpose of enabling their associate members to travel and study abroad.

In proposing "The Cities and Towns of West Yorkshire," Mr. Sydney D. Kitson suggested that although architects might not be given an absolutely free hand in such matters, he appealed for a closer co-operation between local authorities and the profession. An outstanding and fortunate result of such team work could already be seen in progress; he referred to the magnificent Leeds Headrow scheme which, when completed, he felt sure would be a credit to the city.

The Deputy Lord Mayor of Leeds, in responding, said he thought that the city of Leeds and other West Yorkshire towns could hold up their heads as being progressive in the matters of new streets and housing schemes. Their society had made an offer to his council of assistance and advice in matters bearing upon any new civic projects which it might have in view; and he hoped that in a short time advantage would be taken of the society's generous offer.

Mr. Thomas Canby, Deputy Mayor of Huddersfield, said they felt it an honour that their townsman, Mr. Norman Culley, should have been chosen president of their society. He went on to pay a high tribute to the president's abilities, and the zeal he displayed in furthering a wider knowledge and appreciation of good architecture.

Proposing the toast, "Commerce and Architecture," Mr. B. R. Gribbon, Hon. Secretary of the society, said that the commercial world was beginning to find out that good architecture was an asset and not a liability. The better class stores now saw that a little artistry infused into their buildings was to their advantage. The client often came to the architect with his schemes all ready cut and dried; but that was a mistake, as he was already predisposed in their favour. The architect should be consulted independently of these, so that he could take an unbiased view of the problem.

Mr. H. J. C. Johnson, President of the National Federation of Clay Industries, in response, thought that professional and business men should take a brighter view of the country's condition. The majority of public dinner speeches were far too pessimistic in tone. He prophesied an early return to

more prosperous conditions in which the profession would participate to its advantage.

In giving the toast of the guests, Colonel Harold W. Barker, of Bradford, referred to the presence amongst them of Dr. Maxwell Telling, and drew a parallel between the two professions, both of which called for unswerving and persistent research. He thought that, as instanced in Sir Christopher Wren, architects should not altogether omit a study of science and engineering, which had such a fortunate result in that case.

Dr. Maxwell Telling, in response, said there were some diseases doctors could not cure, and others which architects could not cure; and he had heard it said that Leeds was an example of the latter kind; that no dose of architectural medicine would serve to effect an æsthetic cure. They were, however, making an excellent start in the demolition of wide areas of unsightly buildings, to make room for what he felt would be a fine civic improvement.

SOUTH WALES INSTITUTE OF ARCHITECTS— EASTERN BRANCH.

The annual meeting of the above branch was held at the Queen's Hotel, Newport, on Tuesday, 10 February, preceded by a tea at which there was an excellent gathering of members, presided over by Mr. Johnson Blackett, A.R.I.B.A., chairman of the branch.

The President of the South Wales Institute, Mr. T. Alwyn Lloyd, F.R.I.B.A., and the Honorary Secretary of the Institute, Mr. Ivor P. Jones, A.R.I.B.A., were present and addressed the meeting, urging the importance of carrying on the branch activities, and several members spoke to the same effect. Various suggestions were made for increasing the interest of local practising and junior architects.

Election of officers and the committee for the branch for the year 1931-2 was held, Mr. Johnson Blackett being elected Chairman, Mr. C. E. Compton, Hon. Treasurer, and Mr. J. E. Lenton, Hon. Secretary.

Committee: Col. E. H. Fawcner, Messrs. Colin L. Jones, Horace Jones, C. E. Tebbs, C. F. Ward, with Messrs. H. B. Rowe and J. P. Harris representing Associates and Students; and the following were elected representatives of the Branch on the Council of the South Wales Institute of Architects: Messrs. C. F. Bates, J. Blackett, Colin Jones, J. E. Lenton.

CENTRAL BRANCH, CARDIFF.

On 5 February, the annual distribution of prizes at the Welsh School was made by the Lord Mayor of Cardiff, Alderman R. G. Hill Snook. Mr. Norman Edwards, Chairman of the Central Branch of the South Wales Institute, who presided, remarked on the progress of the school in the ten years of its existence, in which time numbers had increased from 6 to 60. The school had had, he said, five successes in the Architectural Competition at the National Eisteddfod in 1930.

Mr. W. S. Purchon, head of the school, gave his report, in which he said that the school was now recognised as one of the leading schools under the scheme administered by the R.I.B.A. Board of Education. The R.I.B.A. Archibald Dawson scholarship had been won by John P. Ward, and the school had two finalists in the Victory Scholarship. The school, said Mr. Purchon, had always supported the National Eisteddfod, though on various occasions they had not been entirely satisfied by the conditions which brought school students into competition with firms of practising architects. The high standard of theses submitted for the school diploma had received high praise from the examiners, and five distinctions had been awarded. He appreciated the strength the R.I.B.A. had been to it, and he also thanked the South Wales

Institute of Architects and many local architects for their support.

The Lord Mayor presented the prizes and mentioned the outstanding pieces of architecture in Cathay Park. Mr. Alwyn Lloyd, President of the South Wales Institute, said that the Institute was taking an interest in the work of the school, and that lectures between the two had proved a success. Principal Charles Coles mentioned that they had had eight diplomas during the year, and said that the school was doing three times the work they had formerly done.

NORTHERN ARCHITECTURAL ASSOCIATION TRADITION AND MODERNISM IN ARCHITECTURE

On 29 January Mr. Stephen Welsh, M.A., B.Arch., A.R.I.B.A., delivered a lecture to the Northern Architectural Students' Club on the subject of "Tradition and Modernism in Architecture."

The lecturer commenced by reviewing the architecture of the nineteenth century in England, and described the temporary arrest of the direct Renaissance tradition caused by rigid adherence to classical orders from the textbooks and lack of unity between plan and elevation.

Mr. Welsh said that the architecture of the middle of the century onwards was influenced by three important factors: Firstly, Romanticism which identified beauty with the barbarously picturesque, and the ideals of Pugin and Ruskin, who extolled the Gothic as the only truly moral, and therefore beautiful, style.

Secondly, Stuart and Revett's "Antiquities of Athens" and the Neo-Grec movement; and thirdly, the industrial revolution and its result—a suppression of nearly all æsthetic considerations in architecture.

The lecturer described the attempt of William Morris and the pre-Raphaelites to revive the tradition of craftsmanship, and from them traced the tradition of the use of local materials in domestic architecture through Webb, Norman Shaw and Sir Edwin Lutyens to modern times.

Mr. Welsh mentioned the attempt of James Mackintosh, of Glasgow, to throw off all tradition and to commence again from the beginning. This movement had little success in this country, but found favour abroad, and is now returning.

The architect is faced with the problem that local materials are more expensive than mass-produced materials from a distance, and must also take into consideration modern introduction, such as steel, glass, and concrete.

The best architecture results, Mr. Welsh said, from a combination of expression of function with beauty.

Architecture had been dominated for far too long by an exaggerated respect for the antique. But bearing in mind tradition, architecture must develop as logically and sanely as modern problems demand. The process must be of evolution not of revolution.

The lecture was illustrated by an excellent set of slides, and great interest was shown in photographs of modern German domestic work which had been done under the direct influence of English tradition.

Notices

THE NINTH GENERAL MEETING.

The Ninth General Meeting of the Session 1930-31 will be held on Monday, 2 March 1931, at 8.30 p.m., for the following purposes:—

To read the Minutes of the General Meeting (Ordinary)

held on Monday, 16 February 1931; formally to admit members attending for the first time since their election.

To present the Royal Gold Medal to Sir Edwin Cooper, A.R.A., F.R.I.B.A.

EXHIBITION IN THE R.I.B.A. GALLERY.

A selection of drawings and photographs illustrating some of Sir Edwin Cooper's architectural work will be on view at the General Meeting on Monday, 2 March, and will remain on exhibition daily between the hours of 10 a.m. and 8 p.m. The Exhibition will close on Saturday, 7 March, at 5 p.m.

R.I.B.A. ANNUAL DINNER, 1931.

The Annual Dinner will take place on Thursday, 21 May 1931, in the Hall of Lincoln's Inn (by kind permission of the Benchers of Lincoln's Inn). Full particulars will be issued to members in due course.

THE ARCHITECTS' CONFERENCE, 1931.

All members and students of the R.I.B.A. and all members of the Allied Societies, the Architectural Association and the Association of Architects, Surveyors and Technical Assistants, are cordially invited to attend the Conference to be held in Dublin from 17 to 20 June 1931, inclusive. Further particulars will be issued in due course.

MEMBERSHIP OF THE R.I.B.A.

THE LICENTIATE CLASS.

The revised Bye-laws of the Royal Institute of British Architects have received the approval of His Majesty's Privy Council and applications may now be sent in for membership of the R.I.B.A. in the Licentiate Class. Full information and the necessary forms will be sent on application being made to the Secretary R.I.B.A., 9 Conduit Street, London, W.1

ASSOCIATES AND THE FELLOWSHIP.

Associates who are eligible and desirous of transferring to the Fellowship are reminded that if they wish to take advantage of the election to take place on 11 May 1931, they should send the necessary nomination forms to the Secretary R.I.B.A. not later than Saturday, 7 March 1931.

LICENTIATES AND THE FELLOWSHIP.

The attention of Licentiates is called to the provisions of Section IV, Clause 4 (b) and (c), of the Supplemental Charter of 1925. Licentiates who are eligible and desirous of transferring to the Fellowship can obtain full particulars on application to the Secretary R.I.B.A., stating the clause under which they propose to apply for nomination.

OVERSEAS APPOINTMENTS.

Members contemplating applying for appointments overseas are recommended to communicate with the Secretary R.I.B.A., who will supply them with any available information respecting conditions of employment, cost of living, climatic conditions, etc.

ELECTION OF STUDENTS R.I.B.A.

The following were elected as Students R.I.B.A. at the meeting of the Council held on 2 February 1931:—

BISHOP: HUGH GUY, The Manor House, Ilkeston, Derbyshire.

CADELL: GILBERT LAURIE, Brae Lodge, Murrayfield, Edinburgh.

CIREGNA: ALBERT PETER, 28, Wharton Street, London, W.C.1.

DARBY: JOHN PERCY "Northside," Great West Road, Lampton, Middlesex.

EARLEY: JOHN, 136, Broadhurst Gardens, London N.W.6.

FERGUSON: CHARLES WILLIAM BANNISTER, Brooklands, Wroxall, Isle of Wight.

FISK: GEORGE MANSON, 506, Pine Avenue West, Montreal, Canada.

GOSSAGE: NEIL FREDERICK, Woodlands, Shamley Green, Guildford.

HORSBURGH: ERNEST REGINALD, 17, Victoria Road, Waterloo, Liverpool.

HUGHES: HENRY GORDON, 4784, Victoria Avenue, Montreal, Canada.

LAMBERT: STANLEY CHARLES GAMBRELL, 1, Parklands Road, Streatham Park, London, S.W.16.

MAXWELL: HERRIES STIRLING, 3480, Peel Street, Montreal, Canada.

MOORE: JOHN EDWIN, 6, Favart Road, Fulham, London, S.W.6.

PEACE: FRANK NORMAN, Homewood, Prestatyn, N. Wales.

PULLAN: FREDRICK ROWLAND, 27, Lidgett Park Road, Leeds.

SANDERSON: JOHN KENYON MARTINDALE, 71, Marchmont Street, W.C.1.

TAYLOR: FREDERICK BOURCHIER, Hillcrest Road, Rockcliffe Park, Ottawa, Ontario, Canada.

WOLEVER: JOHN KENDALL, 536, Prince Albert Avenue, Westmount, P.Q., Canada.

REGISTER OF PROBATIONERS.

During the month of January 1931 the following were registered as Probationers of the Royal Institute:—

AMBROSE: PERCY SCOTTING, 133, Forest Road, Loughton, Essex.

BAILEY: NORMAN ALFRED, 47, Maxwell Road, Bournemouth.

BEESLEY: WILLIAM HENRY, "Lindow," Devonshire Gardens, Grove Park, Chiswick, W.4.

BONSALL: HORACE, 41, Mill Street, Mansfield, Notts.

BOSTEL: ERNEST ROLAND, "Homewood," York Road, Cheam, Surrey.

BROCKLESBY: RICHARD SHEARWOOD, 267, Kingston Road, Merton Park, S.W.19.

CADELL: GILBERT LAURIE, Brae Lodge, Murrayfield, Edinburgh.

CLARK: FRED, 5, Anston Avenue, Worksop, Notts.

COLEMAN: LEONARD GEOFFREY, "Le Chateau," Elm Road, Ewell, Surrey.

COWAN: WILLIAM, 16, Castle View, Stafford.

CULLEY: DENIS GORDON, 61, Lady Margaret Road, Southall, Middlesex.

DAVIDSON: JOHN WILLIAM, 19, Robert Road, Greenhill, nr Sheffield.

DAVIE: ERIC HILL, 25, Ferrers Road, Wheatley, Doncaster.

DAVIS: ROBERT CECIL, 39, Clarendon Road, Leeds.

EARLEY: JOHN, 136, Broadhurst Gardens, West Hampstead, N.W.6.

Competitions

EASTON : WALTER ANNAN BAXTER, Willow Bank, Lower Station, Bathgate, West Lothian, Scotland.
 EATON : FRANK LESLIE, JR., Strathdene, Romiley, Cheshire.
 FIRBANK : RONALD EDMUND, "Hazelhurst," Ellis Road, Clacton-on-Sea, Essex.
 FIRTH : JACK MORVIN, 18, Portland Road, Blackpool.
 GALL : ALAN HENDERSON, 11, Classic Road, Stoneycroft, Liverpool.
 GOSSAGE : NEIL FREDERICK, Woodlands, Shamley Green, Guildford, Surrey.
 GREEN : BERNARD GEORGE, 197, Lee Bank Road, Edgbaston, Birmingham.
 HADDY : JOSEPH ALAN, 90, Roose Road, Barrow-in-Furness, Lancs.
 HADJIDEMETRIU : ANDREAS, Liverpool School of Architecture, The University, Liverpool.
 HAIGH : EDWIN DONALD, "Inglemere," Dalton Road, Morecambe, W.E.
 HOAR : HAROLD FRANK, 5, Gunnersbury Drive, Ealing, W.5.
 HODGSON : ALAN HEW, 288, Ivydale Road, S.E.15.
 HUNT : LESLIE, 5, Muriel Road, Norwich.
 JEPSON : GEORGE WILLIAM, "Cotefield," Hathersage, via Sheffield, Derbyshire.
 JUDD : GEORGE WILLIAM, Rose Cottage, Kidmore End, Reading.
 KINGHORN : ERNEST, 39, Malvern Street, Newcastle.
 LEVY : ERIC, 24, Broom Lane, Broughton Park, Manchester.
 McMORLAND : JOHN ADAM, 32, Garscube Terrace, Edinburgh.
 MANSELL : GEORGE HENNAH, "Crofton," West Hill, Hastings.
 MAUNDER : FRED ALLARD CHARLES, Alveston, Geneva Road West, Darlington.
 MYLES : ALEXANDER WATT, 41, Lindsay Street, Arbroath, Angus.
 NAPPER : JACK HOLLINGWORTH, 222, Abbey Hills Road, Oldham.
 NORCLIFFE : HOWARD, 24, Oxtou Road, Wallasey, Cheshire.
 PILLING : RANDOLPH SMITH, Burnley Municipal School of Art, Burnley, Lancashire.
 PRESCOTT : WILLIAM ALAN, 8, Belmont Park, Belfast, Ireland.
 RIXON : JOHN AUSTIN, 37, Cromwell Road, Walthamstow, E.17.
 ROBERTS : HUGH DUCKWORTH, Dorsington Manor, nr. Stratford-on-Avon.
 SANDERSON : JOHN KENYON MARTINDALE, 71, Marchmont Street, W.C.1.
 SINHA : SUDHIR KUMAR, 8 2, Sankaripara Road, Bhowanipur p.o., Calcutta, Bengal, India.
 SMITH : RONALD FREDERICK, Heatherdene, West Malvern, Malvern, Worcs.
 SOUTAR : DAVID STEWART, Harecraig, Broughty Ferry.
 SPENCER : ALFRED LLOYD, Tunstall Park, Sunderland.
 STEEL : DONALD, "The Rowans," Grove Road, Halton, Leeds.
 STEEN : EDWARD JOHN LINDLEY CARSTAIRS, St. Andrew's Manse, Blackhill, Co. Durham.
 STOBBS : ARTHUR FRANCIS, 85, Auburn Avenue, Wallsend-on-Tyne.
 THOMSON : ERNEST OGILVIE, "Serdang," Dalhousie Place, Arbroath.
 VERNON : FRANK CARLYLE, 49, Collingham Road, Leicester.
 WILKIE : ALEXANDER ABERCROMBIE, 8, Philip Street, Bainsford, Falkirk, Scotland.
 WILLIAMS : CENYDD WADE, Belmont, St. Martins Road, Caerphilly, nr. Cardiff.
 WISEMAN : EDWARD GEORGE, 40, Hestercombe Avenue, Fulham, S.W.6.
 WISEMAN : REGINALD HADLEY, 223, Promenade, Blackpool.
 WOLLASTON : ELIZABETH MARY, Bollindale, Ashley Heath, Altrincham, Cheshire.
 WOOD : GEORGE ARTHUR, "Woodville," Stillington, York.

BERMONDSEY : PROPOSED MEDICAL CLINIC.

The Bermondsey Borough Council invite architects to submit, in open competition, designs for a new Medical Clinic to be erected in Tower Bridge Road.

Assessor : Mr. E. Stanley Hall [F.].

Premiums : £250, £150 and £50.

Last day for receiving designs : 9 March 1931.

BIRMINGHAM : CENTRAL MUNICIPAL BANK AND HEAD OFFICES.

The Committee of Management of the Birmingham Municipal Bank invite architects to submit, in open competition, designs for a new Central Municipal Bank and Head Offices to be erected in Broad Street.

Assessor : Sir Reginald Blomfield, Litt.D., R.A. [F.].

Premiums : £400, £300 and £150.

Last day for receiving designs : 18 April 1931.

Conditions of the competition may be obtained on application to Mr. Herbert H. Humphries, City Engineer and Surveyor, Council House, Birmingham. Deposit £3 3s.

COVENTRY : ISOLATION HOSPITAL.

The City Corporation of Coventry invite architects to submit, in open competition, designs for a new Isolation Hospital for Infectious Diseases to be erected at Pinley.

Assessor : Mr. E. Stanley Hall [F.].

Premiums : £300, £200 and £100.

Last day for receiving designs : 30 April 1931.

Conditions of the competition may be obtained on application to Mr. Frederick Smith, Town Clerk, Council House, Coventry. Deposit £1 1s.

DUDLEY : NEW ELEMENTARY SCHOOL.

The Local Education Authority of Dudley invite architects within 15 miles of Dudley to submit, in competition, designs for a new Elementary School to be erected at Swan Street, Netherton.

Assessor : Mr. H. T. Buckland [F.].

Premiums : £100, £50 and £25.

Last day for receiving designs : 28 February, 1931.

Conditions of the competition may be obtained on application from Mr. J. Whaley, Director of Education, Education Offices, St. James Road, Dudley. Deposit, £1 1s.

(Conditions have not been received.)

SOUTH SHIELDS : INGHAM INFIRMARY.

The Committee of Management of the Ingham Infirmary, South Shields, invite architects in the area of the Northern Architectural Association to submit, in competition, designs for proposed extensions.

Assessor : Lt.-Col. George Reavell, O.B.E. [F.].

Premiums : £250, £100, and £50.

Last day for receiving designs : 16 June 1931.

Conditions of the competition may be obtained on application (before 25 February 1931) to Mr. John Potter, Secretary, Ingham Infirmary, South Shields. Deposit, £2 2s.

(Conditions have not yet been received.)

Members' Column

ACCOMMODATION TO LET

MEMBER of the Institute wishes to meet another member who will take part share of his office at Lincoln's Inn Fields, W.C. Good light, mutual assistance might be arranged. Apply Box 4231, c/o Secretary R.I.B.A., 9 Conduit Street, London, W.1.

SMALL furnished office to let, in good situation, West Central district. Inclusive rent. Apply Box 5231, c/o Secretary R.I.B.A., 9 Conduit Street, London, W.1.

WANTED young architect or first-class draughtsman of experience, to share light office in Temple. Rent £35 per annum inclusive of light, heat, cleaning and telephone. Apply Box No. 1221, c/o Secretary R.I.B.A., 9 Conduit Street, W.1.

PARTNERSHIP WANTED

PARTNERSHIP wanted in an established London architectural practice. Highest personal and professional qualifications. A.R.I.B.A., Tite prizeman, five years' school training. Experience in high-class English and American offices. R.A. exhibits. Certain amount of capital available. Apply Box No. 6131, c/o Secretary R.I.B.A., 9 Conduit Street, London, W.1.

PARTNERSHIP OR POSITION

A.R.I.B.A. desires partnership or position leading to same in the North of England or the Midlands. Capital available. Twenty years' experience in all branches: schools, hospitals, hotels and licensed premises, factories, etc., and usual office routine. Apply Box No. 1411, c/o Secretary R.I.B.A., 9 Conduit Street, London, W.1.

ACCOMMODATION WANTED.

Two Associates, working together, offer £50 a year for an unfurnished office. West End essential. Reply Box No. 2311, c/o Secretary R.I.B.A., 9 Conduit Street, London, W.1.

Minutes X

SESSION 1930-1931.

At the Eighth General Meeting (Ordinary) of the Session 1930-1931, held on Monday, 16 February 1931, at 8 p.m., Sir Banister Fletcher, F.S.A., President, in the chair.

The attendance book was signed by 16 Fellows (including 6 members of Council), 11 Associates (including 1 member of Council), 4 Licentiates, 1 Hon. Fellow, 2 Hon. Associates, and a large number of visitors.

The Minutes of the Ordinary General Meeting held on 2 February, having been published in the JOURNAL, were taken as read, confirmed and signed as correct.

The Hon. Secretary announced the decease of:—

Gustav Clason, of Stockholm, elected Honorary Corresponding Member, 1892;

Edmund Hort New, elected Honorary Associate in 1922;

Alfred Long, Licentiate 1925, Fellow 1926;

Thomas Charles Yates, elected Associate 1885,

and it was Resolved that the regrets of the Institute for their loss be entered on the Minutes and that a message of sympathy and condolence be conveyed to their relatives.

The following members attending for the first time since their election were formally admitted by the President:—

Mr. Chas. W. Glover [L.]

Mr. W. Rawson Maxfield [L.]

Mr. Eustace S. Whitney [L.]

Mr. F. W. Deas, M.A. [F.], having read a Paper on "The Work of Sir Robert Lorimer," a discussion ensued and on the motion of Mr. H. M. Fletcher, M.A. [F.], seconded by Mr. D. S. MacColl, M.A., LL.D., Litt.D. (Hon. A.), a vote of thanks

was passed to Mr. Deas by acclamation and was briefly responded to.

The proceedings closed at 9.50 p.m.

A.B.S. INSURANCE DEPARTMENT.

HOUSE PURCHASE SCHEME

(for property in Great Britain only).

Further Privileges now Available.

The Society is able, through the services of a leading Assurance Office, to assist an Architect (or his client) in securing the capital for the purchase of a house for his own occupation, on the following terms:—

AMOUNT OF LOAN.

Property value exceeding £666, but not exceeding £2,500, 75 per cent. of the value.

Property value exceeding £2,500, but not exceeding £4,500, 66⅔ per cent. of the value.

The value of the property is that certified by the Surveyor employed by the Office.

N.B.—Legal costs and survey fees, and, in certain cases, the amount of the first quarter's premium payment will be advanced in addition to the normal loan.

RATE OF INTEREST.

In respect of loans not exceeding £2,000 5½ per cent. gross.
" " in excess of " 5½ " "

REPAYMENT.

By means of an Endowment Assurance which discharges the loan at the end of 15 or 20 years, or at the earlier death of the borrower.

SPECIAL CONCESSION TO ARCHITECTS.

In the case of houses in course of erection, it has been arranged that, provided the Plan and Specification have been approved by the Surveyor acting for the Office, and the amount of the loan agreed upon, and subject to the house being completed in accordance therewith, ONE HALF of the loan will be advanced on a certificate from the Office's Surveyor that the walls of the house are erected and the roof on and covered in.

NOTE.—Since 1928, over £50,000 has been loaned to architects under this scheme, and as a result over £600 has been handed to the Benevolent Society.

If a quotation is required, kindly send details of your age next birthday, approximate value of house and its exact situation, to the Secretary, A.B.S. Insurance Department, 9 Conduit Street, London, W.

It is desired to point out that the opinions of writers of articles and letters which appear in the R.I.B.A. JOURNAL must be taken as the individual opinions of their authors and not as representative expression of the Institute.

R.I.B.A. JOURNAL.

DATES OF PUBLICATION.—1931:—7, 21 March; 4, 18 April; 2, 16 May; 6, 20 June; 11 July; 8 August; 19 September; 17 October.

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